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LOOKING AHEAD
... with the Editor

CORRELATION of Schilthuis and Katz equations for calculation of oil originally in place in a reservoir, through a mathematical comparison with a consistent system of notations, proves the theoretical equivalence of the two methods, despite apparent range in values up to as high as 20 percent. Discussion of these equations and detailed proof of equivalence will be presented in an article to appear in an early issue.

THE OIL MAN'S CALENDAR

MAR. 21–23	American Association of Petroleum Geologists, Society of Exploration Geophysicists and Society of Economic Paleontologists and Mineralogists, Baker Hotel, Dallas.
22–23	Southern Gas Association, Roosevelt Hotel, New Orleans.
23	Spring Meeting Pacific Coast District API, Biltmore Hotel, Los Angeles.
APRIL 3– 4	Interstate Oil Compact Commission, Quarterly Meeting, Roosevelt Hotel, New Orleans.
10–12	National Association of Corrosion Engineers, Annual Meeting, Rice Hotel, Houston.
12–14	Natural Gasoline Association of America, Baker Hotel, Dallas.
13–14	American Petroleum Institute, Eastern District, Division of Production, Deshler-Wallick Hotel, Columbus, Ohio.
20–21	National Petroleum Association, Semi-Annual Meeting, Cleveland Hotel, Cleveland.
24–25	National Oil Scouts and Landman's Association, Hotel Adolphus, Dallas.
MAY 8–10	Regional Meeting, American Institute of Mining and Metallurgical Engineers, including Petroleum Division, Rice Hotel, Houston.
8–10	National Oil and Gas Power Conference (Oil and Gas Division, Power Division) ASME, Tulsa.
25–26	Spring Meeting, Mid-Continent District, API, Division of Production, Mayo Hotel, Tulsa.
JUNE 13–14	Spring Meeting, Southwestern District, API Division of Production, Rice Hotel, Houston.
OCT. 12–13	Texas Mid-Continent Oil & Gas Association, Houston.
NOV. 13–16	American Petroleum Institute, Stevens Hotel, Chicago.

THE OIL WEEKLY

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The Changing Panorama

Government Would Justify Oil Venture

A WELL organized program of propaganda launched for the purpose of "selling the consuming public the idea that we are short of oil reserves" and thus laying the foundation for a justification of the government's entry into the foreign oil picture is noticeable throughout the country, Frank Buttram of Oklahoma City, former president of IPAA, declared recently in St. Louis.

"It is true that we are not able to produce enough oil to meet all war and civilian requirements and no one in this group is opposed to the use of foreign oil necessary to carry on the war effort," said Buttram. "I insist that if we are given the proper incentive—a sufficient price for oil, adequate material and manpower—we will in the near future be able to supply all of the oil necessary."

Proper Approach in Matter of Deferment

ASKING for deferments for oil field workers and other phases of the petroleum business involves considerable responsibility. The difficulty of deciding the question is too much for any one person to assume. Each company should have a committee charged with the job of determining for whom deferments shall be asked. So bad has the manpower shortage become in the oil business, however, requests for deferments should be approached realistically, and without hesitation. A man's relative worth to the industry and the armed forces should be weighed seriously. Deferments should be thought of in terms of the most effective use of manpower to the services and to the industry, and whether or not it is possible to replace a key man in an industry as important as oil.

There is definitely a limit to the reduction of personnel and still expect the industry to carry on and meet the demands placed on it. This is especially true of engineers, geologists, geophysicists and other experts.

Public agencies concerned with oil face the same situation. For instance the Oil and Gas Division of the Railroad Commission of Texas has a single engineer left on its staff of supervisors, and he is subject to be drafted within the next few days. Undoubtedly the commission will find itself greatly handicapped without engineers.

It is essential that some men be deferred in the oil business, a fact which is realized by Selective Service. It is up to the companies and those interested in seeing that the industry continues to function as near normally as possible, to look the deferment question squarely in the face and approach it fearlessly.

Motorist Gasoline Prospect Not Bright

WHEN will rationing end, and will the war with Germany relieve the situation? These are questions being asked by many Americans.

So far as gasoline is concerned, prospects are that rationing must continue until the end of both wars. Meanwhile, many changes may occur.

Reduction in coupon value for most of the nation becomes effective immediately. Gasoline stocks are too low, and military demand is still growing. Output of refineries cannot be increased materially, because of necessity of making other petroleum products also needed by the machines of war, and the difficulties being experienced in getting crude oil for some plants as production diminishes and transportation for crude becomes harder to spot.

End of the German war probably will increase the supply of gasoline on the East Coast, but even if motorists should benefit thereby this would not influence gasoline consumption as much as in normal times, for car registrations in the East have dropped around 10 percent compared with 6 for the nation.

A small increase in value of coupons through the territory east of the Rocky Mountains might occur when Germany is defeated; however, this cannot be counted upon too strongly. An important factor will be the number of cars still operating. Due to lack of tires and mechanical troubles, a heavier drop in number of cars operating is anticipated this year. Those who still run their cars might get more, if an exceptionally large number of cars become useless.

Then as the war shifts to the Pacific area, West Coast drivers may get less gasoline than now.

Problem of Solving Manpower Shortage

RAILROADS need workers so badly that a drive to fill 100,000 present and prospective job vacancies recently was announced by Defense Transportation Director Joseph B. Eastman, before his death last week. "Unless the rail manpower shortage is alleviated traffic congestion is bound to become serious," Eastman declared as he announced formation of a railroad manpower mobilization committee to head the recruiting drive. Representatives of the War Manpower Commission, ODT, the Railroad Retirement Board, Association of American Railroads, the railroad labor unions and the Office of War Information comprise this central group.

Unless the manpower situation is relieved—and there is little prospect of that—the oil industry might be forced to take a similar step. In fact there has been some thinking along this line by leaders who realize that the 1944 drilling program, for example, can not be successfully carried out unless more workers are enlisted. It is a problem that challenges the best minds of the industry and, for that matter, of the nation which now realizes as never before to what extent its future depends upon adequate supplies of petroleum.

Trends of Progress For Postwar Era

TODAY'S happenings compel the most reluctant of men to marvel at achievements in many fields of activity. They see the fantastic, the unheard-of, the impossible dreams of yesterday taking the shape of realities daily. Without being wholly aware of it perhaps, the oil industry is likely to find itself caught up in a burst of development following the end of the war, that will sweep beyond past accomplishments, bringing obsolescence to many things and practices that are now considered new.

Difficulties of transportation as we know them may be removed by cargo planes capable of carrying a complete drilling rig to isolated locations, landing on airfields floored with steel like those now being used in the war. The whole technique of exploration may be influenced by air travel and transport.

Corrosion may be forgotten through

the use of linings for pipe, tanks, and other equipment, made of plastics, synthetic rubber or new alloys.

Portable pipe lines may be used to carry oil from fields in early stages of development.

Dielectric heat-treated bits may speed drilling to depths not yet reached, through formations that now strain the most improved types of equipment.

Application of electronics may greatly simplify control of equipment in field operations. About $500,000,000 worth of business has been done in the industrial use of electronics in the last three years, excluding radio and radar. The established use of electronics as an industrial tool is certain to have a pyramiding effect with full peacetime utilization.

Oil research can be stimulated through use of the electronic microscope which is capable of producing images 10,000 times the size of the specimen, and which is ten times more powerful than the best known light microscope. Also quantitative and qualitative analyses of petroleum may be improved through application of the mass spectrometer.

These are a few of the trends already on the horizon. Others are certain.

Distribution Ideas Continue Important

IN POSTWAR trade distribution executives should and will rely more heavily than ever before on the techniques of distribution research. When effectively teamed up with product research, distribution research, as viewed by the National Association of Manufacturers, is industry's most effective and certainly its most modern machinery for measuring market possibilities and distribution efficiency.

The basic elements of distribution costs in the past are the necessary elements of distribution costs in the future, and are the starting point for research looking to greater efficiency.

The oil industry has been a pioneer in effective distribution of its products, attested by the fact that petroleum and its derivatives are known and used round the world. Leading nations owe their progress largely to oil in some form or other.

The part that oil will play in rehabilitation of the world when peace is achieved will be great. How to distribute this oil most judiciously may well tax the best brains of the oil companies, and call for a more intensive use of research than has yet been employed.

Ancient and Modern History

"THE highly successful republican system of ancient Rome encouraged creative thinking and reached great heights, but later it was plucked by political demagogues who flaunted their distorted sense of patronage until one third of the population were regimenting the rest of the population. Then came the decline of their creative thinking, the fall of the Romans, bankruptcy, dictatorship, the Dark Ages—ONE THOUSAND YEARS OF MISERY! . . .

"A certain amount of government is absolutely necessary in peacetime to keep people from imposing on the rights of each other; and in wartime a certain amount of emergency government expansion is necessary to provide efficient use of limited manpower and critical materials in prosecution of the war. But even before the war our government was becoming 'big government.' It was becoming so big that like big business, it needed regulation to keep the demagogues from destroying the principles that made America great. It is for the preservation of those principles that America is fighting this war. What a tragedy it would be if our fighting men were to return to something which resembles the very thing they are fighting against."

—From "The Seeds That Grow Jobs," by Claude P. Parsons.

New Microscope Is Important Advance

IN THE long, slow march of scientific progress, research has been dependent on equipment. Frequently greater speed and accuracy would have been possible if the proper tools for test work had been available. A peep into the pioneer laboratories of the world would leave modern scientists dazed from the crudity of equipment with which early scholars had to do their work. More often than not, these students devised their own apparatus, and strange as it may seem, it worked.

Happily for science, today's developments include wonderful improvement in research devices. Laboratory technique is simplified through the use of modern instruments almost unbelievable in their scope of application. And this scope is constantly being extended.

Announcement of the electron microscope, for instance, brings a new world within view for students of our time. Producing images 10,000 times the size of the specimen, and being approximately ten times more powerful than the best light microscopes, these new ones may make possible a rate of progress in research that will make all previous speed seem slow in comparison.

In the field of paleontology this new microscope will be certain to bring revelations of importance to the oil industry. It is not unthinkable that it may make present information about oil in the earth obsolete. Great possibilities lie in an instrument ten times more powerful than the best we have today.

Will the Strippers Take It?

THE OPA is apparently all set to adopt the premium plan to assure profitable operation of stripper wells, with payments of up to 30 percent to operators whose wells yield less than 6 barrels per day. Sumner Pike, OPA oil administrator, is quoted as predicting that the plan will be put into effect immediately.

In view of this possibility it will be most interesting to note the reaction of stripper operators, who, so far, generally have gone along with the IPAA and its policy of opposition to government subsidies, bonuses or any other payments that might obviate the boosting of crude prices for every producer. If the plan is put into effect, the stage will be set for a real test of the organizational unity of the small producer as a group.

Relief is in sight for the marginal well stripper. Will he accept the payment to save his financial neck—or will he stick to his enunciated principles and go along with the gang at a personal sacrifice? It looks as if he will have to make his decision soon, and either way, his verdict will be of importance to the industry as a whole.

Post-war Auto Market Prospect Bright

JULY, 1945, will see 63 percent of all the automobiles on the road at least six years old. Nine and a half million cars or nearly half the gross total will be fugitives from junk piles. Six and a half million former car owners will be pedestrians. One million former truck owners will be without trucks.

On an average 2½ million automobiles were produced each year before the war for 12 years. An average price was $1000. Costs now have risen to an average of $1250. One light car manufacturer estimates an annual production, comes peace, of 4,000,000 per year. Other manufacturers estimate 5 to 6 million units.

Lower Ordovician and Cambrian Oil Possibilities in Illinois

Production of large volumes from these formations in other states suggest commercial possibilities in southern two-thirds of state, where they constitute almost unexplored geological "layer"

By STEWART FOLK, Associate Geologist,
Illinois State Geological Survey, Urbana*

BELOW the St. Peter formation in Illinois are many hundreds of feet of Lower Ordovician and Cambrian sedimentary rocks—dolomites, shales, and sandstones—of marine origin. The folding and partial erosion of these older strata before the St. Peter sands were deposited produced the most marked unconformity in the Lower Paleozoic succession of Illinois and adjoining states (see Figure 1). Some of the subsurface dolomites and sandstones are porous and permeable. Traces of oil have been reported in them in Illinois, and oil is produced from equivalent strata in Texas (Ellenburger limestone), Oklahoma and Kansas (Arbuckle or "Siliceous" lime and the Reagan or Lamotte or "Basal" sand), and in Tennessee (the Knox dolomite). Such conditions suggest that commercially valuable quantities of oil may occur in the Lower Ordovician and Cambrian formations in the southern two thirds of Illinois, where they constitute an almost unexplored geological "layer." Only a few tests have been drilled to them and none has been drilled through them in this area. The present discussion is a preliminary report of a study being conducted by the Illinois Geological Survey and is based largely on data from Northern Illinois.

The Northern Illinois correlatives of the Ellenburger, Arbuckle, and Knox strata are, in descending order, the Shakopee, New Richmond, and Oneota formations of the Prairie du Chien group of Lower Ordovician age and the Trempeleau formation of Upper Cambrian age. Equivalent strata in Southwestern Illinois are designated by names used in the Ozark region (see Figure 2). Oil shows have been reported in beds of Prairie du Chien and Trempeleau age in tests drilled in West-Central and Southwestern Illinois (see Table 1). No oil shows have been reported in them in the Illinois Basin, but only four tests in the basin have been drilled into pre-St. Peter strata, and of these none has gone deep enough to test even all of the Prairie du Chien.

The Cambrian formations below the Trempeleau are the Franconia, Galesville, Eau Claire, and Mt. Simon, in descending order. They have been correlated with the Wilberns, Cap Mountain, and Hickory formations of Texas, with the basal portion of the Arbuckle and the Honey Creek, Cap Mountain, and Reagan formations of Oklahoma, and the Doe Run, Derby, Davis, Bonneterre, and Lamotte formations of Missouri. They are not known to have been penetrated in Southern Illinois, but a well in St. Louis, Missouri, was drilled through them and into the pre-Cambrian granite.

The Shakopee and Oneota formations in Northern Illinois consist largely of dolomite with some interbedded thin sandstones. There are subsurface openings or "crevices" in the dolomite beds in places. The New Richmond formation consists chiefly of sandstone with lenses and interbeds of dolomite and thin beds of shale. In LaSalle County, in North-Central Illinois, the permeability of the New Richmond sandstone in outcrops ranges to more than 5,000 millidarcies, and its thickness in the subsurface approaches 200 feet. Elsewhere it is much thinner. To the east it either grades laterally into dolomite or wedges out so that the Shakopee overlaps it and lies directly on the Oneota. Oolitic chert and siliceous oolites occur in both dolomites and sandstones and serve to distinguish the Prairie du Chien formations from overlying and underlying formations.

Throughout large areas in Northern Illinois Prairie du Chien strata are missing and the St. Peter formation rests on Cambrian strata. Apparently these areas were upfolded and the Lower Ordovician and some of the Cambrian strata were stripped away in pre-St. Peter time. In other areas the Prairie du Chien attains a thickness of more than 400 feet, but even in these areas it is locally thin or absent owing to pre-St. Peter erosion. Its surface resembles sink-hole or karst topography like that of the Arbuckle dolomite, which is its correlative and a prolific producing zone in the Silica and Trapp pools of Kansas.[2,3] The Prairie du Chien group thickens southward, being between 800 and 900 feet thick in Southwestern Illinois.

The Trempeleau formation, which consists chiefly of siltstone and sandstone (including the Jordan, a highly permeable sandstone) in Iowa and Wisconsin, is dominantly dolomite in Illinois. Apparently the sandstones and siltstones of adjoining states grade laterally into the dolomite, some of which is silty and sandy. In the dolomite are numerous quartz-lined vugs and some large openings as much as 8 feet in height. The latter, termed "crevices" by the drillers, under different conditions make or take great volumes of fluid; they seemingly represent extensive cavern systems that were de-

TABLE 1
Oil Shows in Lower Ordovician and Cambrian Formations, Reported by Driller

COUNTY	Sec., T., R., Operator, Farm and Well No.	OIL SHOWS		Total Depth (feet)	Date Drilled
		Formation	Depth (feet)		
Jersey	32-7n-11w, A. W. Gerson, Knight 1	Jefferson City	1765–70	2235	1939
McDonough	33-5n-4w, Curry & Rollestone, Hardy 1	Jordan?	1822?	2306	1930
Monroe	20-2s-9w, E. H. Gorse, Hergenroeder 1	Jefferson City	1700–12	2248	1909
St. Clair	26-1n-10w, S. G. Lockwood, Dyroff 1	Jefferson City	2054–61	2904	1924
		Gasconade	2300–07		
		Van Buren (gas)	2320–47		
		Eminence	2540–47		
		Eminence	2580–90		
		Eminence	2710–14		
		Potosi	2812–28		
		Potosi	2836–50		
		Potosi	2900–04		
St. Clair	28-1n-10w, Tarlton & Sklar, Dyroff 1-A	Powell	1075–90*	1800	1943

* Reported by scout.

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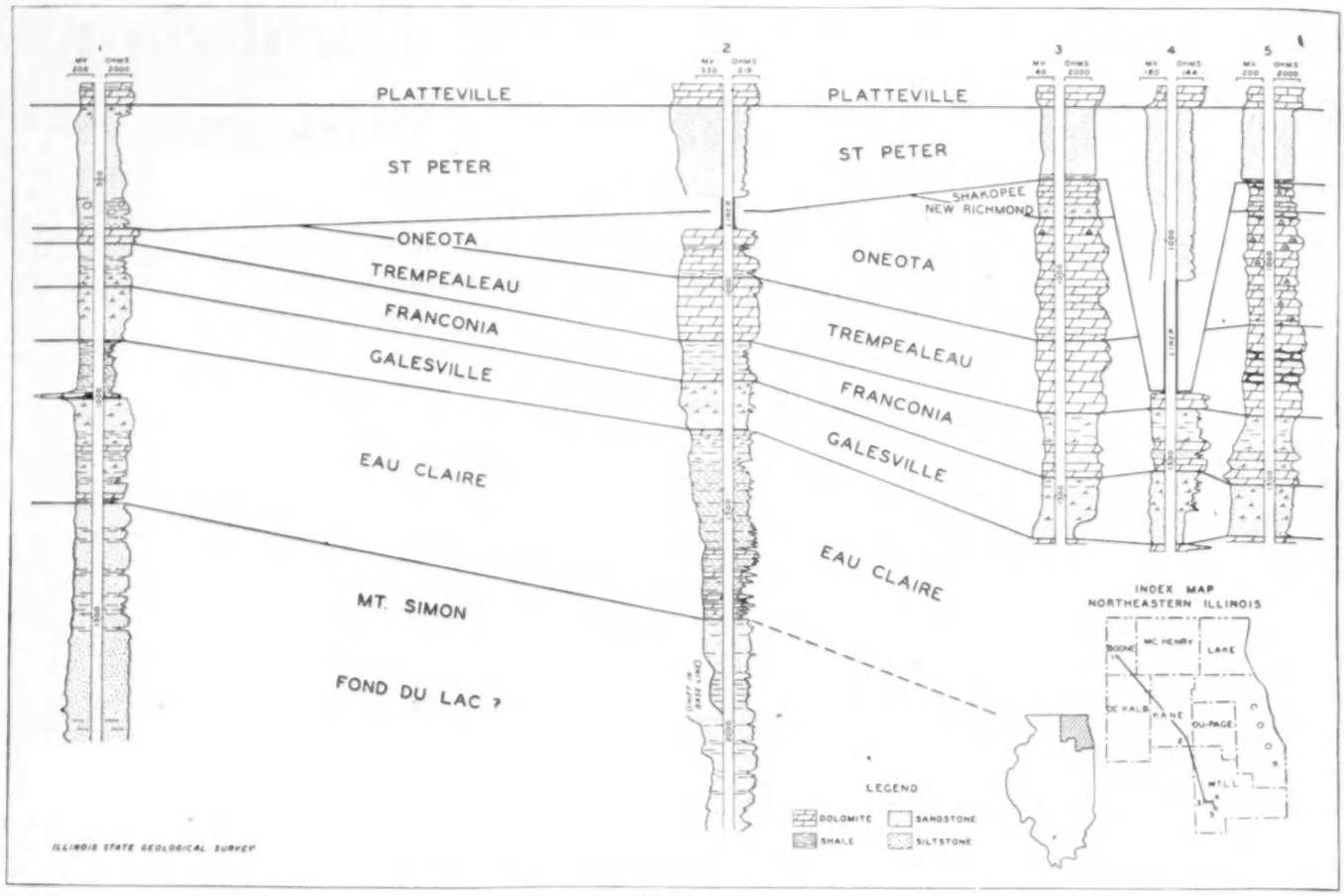

FIGURE 1

Graphic cross section of Lower Ordovician and Cambrian strata in Northeastern Illinois, based on electric logs and sample studies.

veloped after Trempeleau and before St. Peter time. The thickness of the Trempeleau ranges from 0 to 260 feet in Northern Illinois; its normal thickness is approximately 200 feet. Local variations in thickness of the Trempeleau and the widespread occurrence of "crevices" suggest that an unconformity of some magnitude separates the Trempeleau from the overlying Prairie du Chien.

The Franconia formation comprises glauconitic sandstone, sandy shale, and sandy dolomite. Some of the sandstones are porous, others are argillaceous or dolomitic and "tight." Permeability is restricted horizontally by cross-bedding and lenticularity, vertically by shale partings and interbeds. The thickness of the Franconia ranges from less than 50 to almost 200 feet.

The Galesville formation consists of porous sandstone with interbeds of sandy dolomite. The permeability of outcrop samples from Wisconsin exceeds 5000 millidarcies. The average thickness of the Galesville in Northern Illinois is almost 200 feet.

The Eau Claire formation includes shales, siltstones, sandstones, and dolomites, many of which are glauconitic and fossiliferous. Some of the lower Eau Claire sandstones possess good porosity and permeability. The Eau Claire averages between 400 and 500 feet in thickness.

The Mt. Simon formation consists almost entirely of sandstone, some of it porous and permeable. Formerly all the sedimentary strata below the Eau Claire formation and above the pre-Cambrian granite were called Mt. Simon in Illinois, but on the basis of recent studies it is now considered that the lower part of this sequence, consisting of conglomeratic and arkosic sandstones and sandy shales, prevailingly red in color, is a separate formation and may be equivalent to the Fond du Lac beds of pre-Cambrian age in Minnesota. The thickness of the sedimentary section below the Eau Claire ranges from approximately 1700 feet to more than 2200 feet in Northern Illinois.

The thickness of all the Lower Ordovician and Cambrian strata below the St. Peter in the deep well at St. Louis, Missouri, was reported to be 2230 feet.

The Lower Ordovician and Cambrian formations in Illinois have experienced a number of periods of structural movement. The most important of these were (1) in the Ordovician period, after Shakopee and before St. Peter deposition, (2) during the Devonian period, (3) in the post-Mississippian, pre-Pennsylvanian interval, and (4) in post-Pennsylvanian time. Structural traps for the accumulation of oil in the formations below the St. Peter could have been formed during any or all of these and other periods of folding. There also might be stratigraphic traps in the dolomites and sandstones below the St. Peter.

Whether or not the structure of the overlying beds can be used as a guide in exploration for oil in the Lower Ordovician and Cambrian formations is not now known, nor can it be predicted whether the formations below the St. Peter will more probably be productive in pools producing from higher formations or in areas where the higher formations produce no oil. The Lower Ordovician formations have been reached on only four producing structures in Illinois; the Cambrian on only one. On the Waterloo-Dupo anticline, the only producing structure tested to the Cambrian, an oil show was reported in the Lower Ordovician, and several shows were reported in both Lower Ordovician and Cambrian formations in a test on the flanks of the structure. The greatest thickness of pre-St. Peter strata penetrated on the other three structures that were drilled into the Lower Ordovician was only 230 feet, which is not enough for a real test.

From a structural viewpoint there are two regions in Illinois that appear to be

most favorable for Lower Ordovician and Cambrian prospecting at present. They are (1) Eastern Illinois, from Ford and Iroquois Counties south to Wabash County, and (2) Western Illinois, from Henderson and Warren Counties south to Randolph County. Through Eastern Illinois extends the LaSalle anticlinal belt, the most prominent structural feature of the state; along it are several well-defined closures, none of which have been drilled below the St. Peter formation, south of Ford County.

There are a number of anticlines in Western Illinois on which the Lower Ordovician and Cambrian strata merit testing. Some of them are Pennsylvanian or later in age, some are pre-Mississippian. The fact that Western Illinois was structurally high during the Silurian and Devonian periods as well as at later times suggests that there also may have been pre-St. Peter folding in the area.

Possibilities for Lower Ordovician and Cambrian production may be as good in the Illinois basin as in Eastern and Western Illinois, but drilling costs probably are too high to warrant much exploration there until more is known about the Lower Ordovician and Cambrian in other parts of Illinois. Depth to the top of the Lower Ordovician is less than 4000 feet throughout most of Western Illinois and along a greater part of the LaSalle anticlinal belt, but in the basin it is as much as or more than 8000 feet.

Summary

Although the pre-St. Peter sedimentary rocks of Central and Southern Illinois have been so little explored that the Lower Ordovician and Cambrian geological conditions there are little known, it may be inferred that they are similar to conditions in Northern Illinois. If so, there is no lack of porous zones and of structural traps, and possibly stratigraphic traps. Oil shows reported to occur in these rocks in Illinois and the quantity of oil produced from their equivalents in other states suggest that commercial production may be obtained from them in Illinois. All tests of them should be drilled at least through the Trempeleau formation; and to the thorough they should be drilled into the Mt. Simon formation. Structurally favorable areas in the eastern and western parts of the state are considered the best possibilities for current exploration for Lower Ordovician and Cambrian oil pools in Illinois.

ACKNOWLEDGEMENTS

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	NORTHERN ILLINOIS		MISSOURI		OKLAHOMA	TEXAS
LOWER ORDOVICIAN	PRAIRIE DU CHIEN	SHAKOPEE NEW RICHMOND ONEOTA	BLACK ROCK SMITHVILLE POWELL COTTER JEFFERSON CITY ROUBIDOUX GASCONADE VAN BUREN Gunter ss. member		ARBUCKLE ("Siliceous lime")	ELLENBURGER
CAMBRIAN	Jordan ss. member TREMPEALEAU		EMINENCE POTOSI			
	FRANCONIA Ironton ss. member		ELVINS	DOE RUN DERBY DAVIS	HONEY CREEK	WILBERNS
	GALESVILLE		BONNETERRE		CAP MOUNTAIN	Lion Mt. ss. member CAP MOUNTAIN
	EAU CLAIRE					
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FIGURE 2

Tentative correlation chart of Lower Ordovician and Cambrian strata. Based principally upon: (a) Bridge, Josiah, The Correlation of the Upper Cambrian Sections of Missouri and Texas with the Section in the Upper Mississippi Valley: U. S. Geol. Survey Prof. Paper 186-L, 1936. (b) Bridge, Josiah, Geology of the Eminence and Cardareva Quadrangles: Missouri Bur. Geol. and Mines, Vol. 24, second ser., 1930. (c) Dake, C. L., and Bridge, Josiah, Faunal Correlation of the Ellenburger Limestone of Texas (with an appendix by E. O. Ulrich): Bull. Geol. Soc. America, Vol. 43, pp. 725-48, 1932.

Wartime Use of Abandoned Wells As Induction Centers

Stripper field operators save present secondary recovery projects until materials become available for drilling new injection wells

By F. R. COZZENS, Equity Oil & Gas Company

BECAUSE of spacing restrictions and the shortage of materials, secondary oil recovery operators find it necessary to hold new drillings to a minimum, and yet get as much oil as possible from existing wells. Old wells have been reconditioned in divers ways, inputs and producers alternated back and forth, and pressures increased to an extent where many promising recovery projects are being literally "slugged" to death. Records show that as a means of increasing wartime oil production, a good job has been done in most fields so far, but invariably there comes a time—and that time has already arrived in some districts—when even excessive stimulation fails to get results, production reaches its peak and the wells start to decline. If production has been drawn in a uniform manner from the sand, the operator has no cause for complaint, but on far too many projects the sand, except in the immediate area of producing wells, still shows a remarkably high content of recoverable oil. If this oil is to be recovered in time and in quantities sufficient for the present emergency, a drastic rearrangement of patterns is necessary, and in the majority of cases the production decline must be curbed before the cost of producing the oil becomes prohibitive.

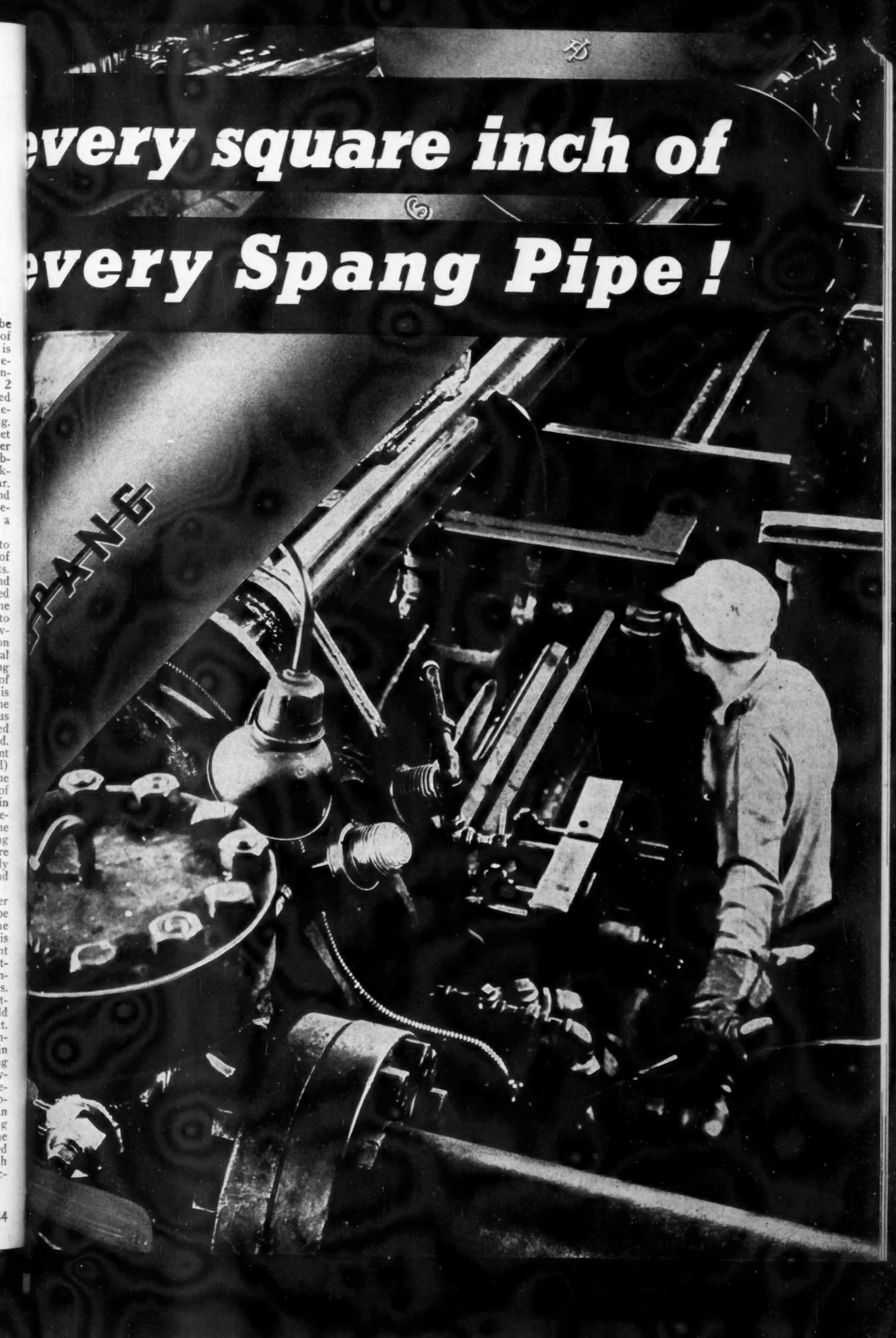
In several districts of the Eastern stripper fields where this problem was faced as early as 1941, some promising results are being secured by using abandoned wells as induction centers. The plan, of which many were skeptical when first suggested, is based on the fact that the area of sand, drained low of its oil content by the original well, now serves as a reservoir into and toward which, fluid is being forced constantly by present pressuring. Induction of air, gas or water at this point, not only pushes dammed-up oil back into the recovery pattern, but likewise opens new channels through which virgin oil is brought into range of producing wells. In a few instances, the opening of abandoned wells has entirely overcome the need of drilling new ones. In the majority of cases, however, the plan is being utilized to save present recovery structures from collapse until new drillings are feasible.

The basic requirement for making an abandoned well an effective part of a recovery pattern is that the well must not have been used previously as an input. Best results are obtained on wells which have been salvaged and plugged before present recovery measures were started. Generally, the operator has at least a partial log record as to the location and depth of all wells abandoned on his property, and from these data he selects those wells which are within radius or influence of present producers. Many of the old wells still contain the original drive-pipe extending above ground. Most of them are bridged at the top and at intervals along the walls with debris or trash which is easily drilled out. Once the hole diameter (at the top) has been ascertained, the procedure is to rig a spudding outfit or light string of tools over the site, using in most cases bits of the same dimensions as the original bore. Cleaning out is accomplished most efficiently by drilling with a taut cable, and using as little outside water as possible. If the sidewalls are fairly dry, as they are likely to be in the upper stretches of hole, very little cavings are encountered, and the original casing point usually can be reached before any pipe is needed. If water is encountered, the wise operator then starts his pipe and allows it to follow the tools, especially through areas of soft formations. First-grade casing is rarely used and it is seldom necessary to seat the pipe in cement. Some of these old wells, especially in the lower stretches of hole, contain one or more sections of casing which were broken off when the original pipe was pulled. When this obstacle is met, it is necessary to change to a smaller bit to avoid sticking. By proceeding with caution, the old casing is generally made an aid in holding back the wall cavings while cleaning continues, and unless badly damaged, no time need be taken to remove it.

When the top of the pay sand has been reached, wire line measurements are carefully taken so that a packer can be set for the pressure induction pipe. Since the old-time practice was to shoot a well with as much nitro-glycerine as the sand column would hold, these old holes are usually bottomed with an ample-sized chamber which makes sand-zoning practically impossible. The logical course, therefore, is to bail out the sludge and residue from this chamber, and give the sidewalls a thorough cleaning. In wall-cleaning, the most effective treatment is a light charge (10 to 20 quarts) of nitro-glycerine, loaded in a 4-inch torpedo shell, which is anchored at a safe distance below the shoulder at the top of the sand. Some operators get splendid cleaning results also by filling, or nearly filling the shot-hole with water (measured), then dropping in carbide, in proportions of 100 pounds carbide to each barrel of water. Through chemical action, temperature of the water is raised above the point where paraffin dissolves. After agitation ceases, and while the mixture is still hot, the sludge and residue are bailed out. Where paraffin is not excessive, cleaning is often done by rinsing the hole several times with fresh, live oil which is later filtered and saved. Regardless of the method used, the objective is to provide a clean, open sand-face so that induction force will not be retarded. A pocket, or any extension of hole below the base of the sand is plugged off with rubble, gravel or cement. The final step is to insert the induction pipe (usually tubing, 1 to 2 inches in diameter), which is seated snugly upon a packer at a point immediately below the bottom of the casing. In most wells this point is 2 to 5 feet below the top of the pay sand. Rubber packers are used where they can be obtained, but many operators make packers on the job from burlap and tar. After being fitted around the pipe and seated at the proper depth, these homemade packers are backed up with a column of cement.

Driving force is admitted gradually to the newly-fitted well until by the end of a week it equals that of the other inputs. When pipe and packer have been found capable of withstanding the desired pressure, the casing is removed. Time required for the new induction point to become an effective agent in the recovery pattern depends considerably upon the nature of the sand, but as a general rule, favorable results on the producing wells can be expected within a period of 60 to 90 days. Speed of this action is explained by the fact that during the producing life of the old well, various fractures and channels were created within the localized area of sand. Through these openings, the present driving force reaches its objective (fluid) with reduced resistance and delay. Due also to these openings, such areas of sand take pressure more rapidly, and in greater amounts. On very tight, or restricted sands, operators may hasten the action of the driving force by lowering pressures on old inputs, while pressure in the newly-fitted well is temporarily increased. This practice is likewise found beneficial in releasing trapped oil.

There is no set rule as to the number of abandoned wells which need be opened on a given acreage. Where the customary fivespot recovery pattern is used, one fresh input is usually sufficient for each pattern. Where no regular pattern is followed, one fresh input is generally allowed for each three producers. The rule is flexible, and very little critical material is needed to fit these old wells into any type of recovery project. In most localities, the job can be completed at 60 percent of the cost, and in one third the time required for drilling new wells. This does not mean, however, that the method is designed to replace new drilling. The experienced operator with an eye to the future will plan new wells and do the necessary drilling whenever conditions permit. In the meantime he utilizes certain abandoned wells to maintain the vital oil flow which is necessary to save his recovery structure from ruin.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Determining Saturations by an Extraction Distillation Method

Oil and water saturations can be determined simultaneously, accurately and rapidly, with further advantage of cleaning core samples for use in porosity and permeability tests

By S. T. YUSTER
Department of Petroleum and Natural Gas Engineering, School of Mineral Industries, The Pennsylvania State College, State College, Pennsylvania

THE routine determination of saturations in a core-testing laboratory requires that a simple, accurate, and rapid method be available for these tests. Such a method has been in use in the Petroleum Production Research Laboratories of The Pennsylvania State College for some time and it is believed that some of the features of the method are sufficiently different from those in use in other laboratories to warrant publication.

In essence the method consists in distilling the water and extracting the oil from a core sample with one solvent. The oil is removed by a drip extraction while the water content of the core in the vapor state is swept out by a stream of solvent vapors and condensed.

Apparatus

Two types of apparatus have been used, one for large samples and the second for smaller samples. Figure 1 shows the apparatus for a small sample and Figure 2 for the larger sample and banks of the units are pictured in Figures 3 and 4. All of the apparatus is made of pyrex glass.

The small sample extractor consists of an Erlenmeyer flask with an elongated neck fitted with a 40/50 standard-taper ground-glass joint. This is connected to a water trap which in turn joins with a reflux condenser fitted with a 24/40 standard-taper ground-glass joint. Both the reflux condenser and the trap have drip tips to return the condensed solvent. An alundum thimble 3x8 cm. holds the core sample and is hung from two small holes in the water trap tip by means of wire hooks. The water trap has a maximum capacity of 5 ml. with a smallest subdivision of .05 ml. The volume can be read to the nearest .02 ml. and estimated to about .01 ml.

The large sample extractor consists of a Florence flask with an elongated neck fitted with a 50/50 standard-taper ground-glass joint. The flask has four equally spaced indentations at the base of the neck for supporting the 43x126 mm. Alfrax thimble which holds the core sample. The flask is connected to the water trap which in turn joins with a reflux condenser fitted with a 24/40 standard-taper ground-glass joint. The reflux condenser and water trap are made with drip tips to return the condensed solvent. The water trap has a maximum capacity of 25 ml. with the first 10 ml. calibrated in 0.1 ml. subdivisions. Within the first 2 ml. the water collected can be estimated to 0.02 ml.

Method for Determining Saturations

In determining the saturation, oil and water, the core is removed from its sealed container and rapidly broken into a size convenient for filling the thimbles. After filling the thimbles to about .5 inch from the top, they are weighed to the nearest 0.01 gram. This process should be conducted as rapidly as possible in order to minimize the evaporation of water and the lighter ends of the oil. In certain cases it may be desirable to use weighing bottles for holding the smaller thimbles and overcome this difficulty. If the core is friable and contains loose pieces of sand, it is advisable to use a loose plug of cotton on the top of the filled thimble. This plug of cotton must be weighed with the clean, dry thimble prior to filling with the core sample.

After the thimble has been weighed, the solvent is placed in the flasks and the apparatus is assembled. No stopcock lubricant must be used under any circumstances on the ground glass joints as it will result in errors. The standard taper joints fit sufficiently close to give an adequate seal. The solvent in the small sample extractor flasks should come to about three quarters of an inch from the bottom of the suspended thimble. The large sample extraction flasks should have the bulb about half filled with solvent. The top of the condenser tube should be covered with a fairly snug-fitting glass vial or a loose plug of cotton to prevent atmospheric moisture from collecting in the condenser.

The source of heat in this laboratory for vaporizing the solvent is a series of individual electric hot plates. The plates are of the chromalox type, being 4½ inches in diameter and rated at 300 watts at 115 volts. The heat-controlling switch is on the cord so that the usual heat failures of springs and contacts on switches attached to the hot plate proper are eliminated. A long rectangular hot plate could be substituted for the individual ones in a bank of extractors but it has been found that the separate heating units make for very flexible operation.

The heat should be applied at such a rate so as just to prevent the solvent from overflowing the thimble. If the thimble has a high premeability it is possible that the rate of heating necessary to maintain fluid level in the thimble will be sufficient to flood the condensor. Under these conditions the rate of heating must be reduced or what is more preferable, lower-permeability thimbles should be used. A rapid rate of heating entrains oil in some of the droplets which arise from the boiling surface and these are carried up to the bottom of the thimbles. In order to overcome this error, the heat should be turned to low about one half hour before the end of the run so as to reduce this entrainment and remove the oil from the bottom of the thimbles.

The time necessary for complete extraction will vary with the type of solvent used, the size of the pieces of formation placed in the extractor, and the permeability of the formation. Small pieces, high permeability, and high extraction temperatures all favor shorter extraction times. If the samples are crushed almost to grain size as has been done in some laboratories, one to two

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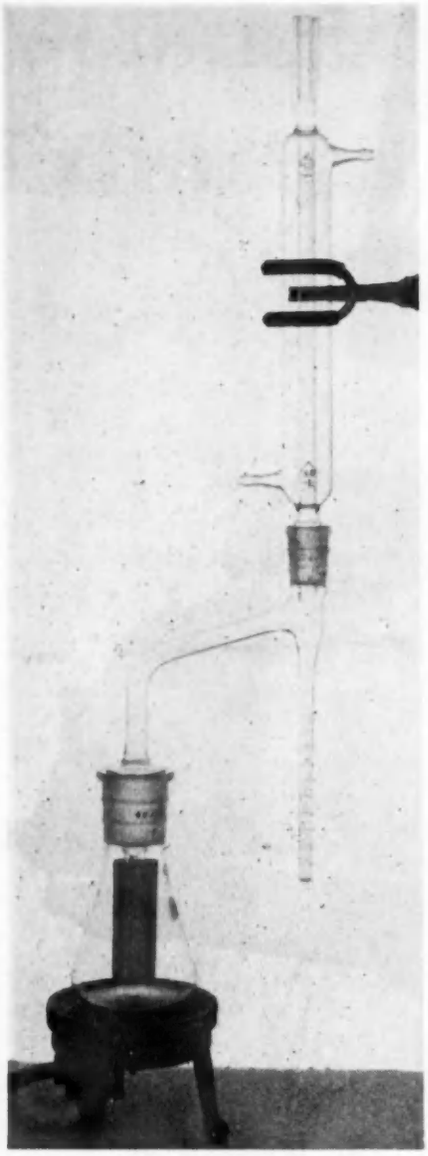

FIGURE 1
Apparatus for small sample

hours extraction time would be sufficient. The rate at which the water is collected in the trap may be used as a criterion to estimate the required length of extraction time. About four to five times as much time should be allowed for extracting the oil as was required to distill off all of the water. By noting the elapsed extraction time at which no further water is collected in the trap it will be possible to estimate the time required for extracting the oil.

At times there may be a holdup of a small quantity of water in the condenser in the form of droplets. Several methods have been used to dislodge this holdup. One method which has been used with some success in the case of larger droplets is pouring a small quantity of clean solvent down the condenser. The rush of liquid will displace the larger droplets. A long stirring rod, a wire, and a small steel rod with a cork stopper on the end of it have also been used with varying degrees of success. It was found that very clean apparatus reduced this holdup to the point of almost being negligible. The water traps and condensers should be thoroughly cleaned with soap and a brush, treated with active cleaning solution, washed with distilled water and dried.

After extraction is complete, the heat is turned off and the extractors are allowed to cool off for a short time. The thimbles are placed in a fume hood to remove most of the solvent and then put in an oven adjusted to about 105°C. After all of the solvent has been driven off, the thimble is dessicated and weighed rapidly to the nearest 0.01 gram. After the water trap has come to room temperature, the volume of water collected is read. If there is some holdup in the trap or if the water solvent interface is irregular, moving a small wire in the troublesome region is sometimes helpful. Grasping the water trap firmly in the right hand and bringing the wrist of this hand sharply against the palm of the left hand may eliminate the difficulty.

It is advisable to calibrate the graduations on the water trap by introducing water into the trap containing the solvent. The direction of curvature of the meniscus should be the same in the calibration as it is during an actual test.

Porosity Measurement

After the extracted sand has been weighed, the bulk volume should be determined. This is accomplished by first placing all of the sample contained in the thimble in a beaker of water and allowing it to take water until equilibrium has been reached. This is usually the point at which bubbles cease to rise from the pieces of formation. The sample is removed from the beaker, the excess water removed, and all of the sample placed in a graduated cylinder which is partially filled with water. The increase in volume in the graduate gives the bulk volume. The size of graduate to use should be of the order of that just necessary to hold the sample. The greatest accuracy is obtained under such conditions.

After the bulk-volume test, the largest pieces of formation should be removed for porosity and permeability tests. If the permeability test pieces are to be ground to size and shape with water, the samples are taken directly and processed. If the sample is to be ground dry, the pieces should be placed in an oven set at about 105°C. and dried. The porosity samples after drying and dessicating are weighed and porosity run by one of the standard methods. Only the pore volume in a given weight of dry sand needs to be determined since the bulk volume on a given weight of dry sand has already been measured.

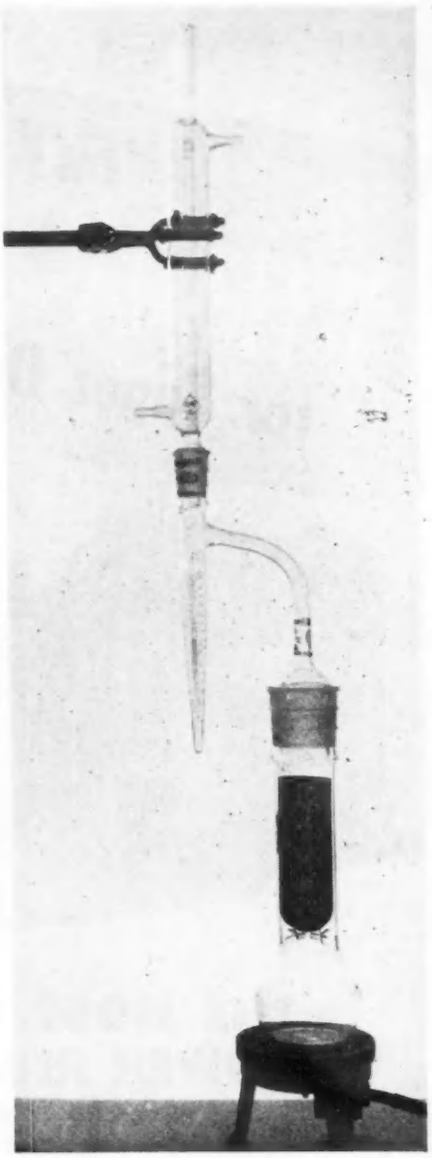

FIGURE 2
Apparatus for larger sample

It is possible to make a fairly accurate approximation of the porosity on the formation which can be used to calculate the percent saturation. This method is based upon the supposition that the effective density of the formation is a constant. In some reservoirs this holds fairly exact. All the information required for the calculation is the effective density of the formation, the bulk volume, and the weight of the sand. The following equation is used:

$$(1)\ \text{Percent porosity} = \left[1 - \frac{\text{weight of sample}}{\text{bulk volume} \times \text{effective density}}\right] 100$$

If the formation is almost completely silica and there are no sealed-off pore spaces, the effective density would be 2.65.

Calculation of Saturations

The difference in weight between the core samples containing oil and water and the extracted samples represents the

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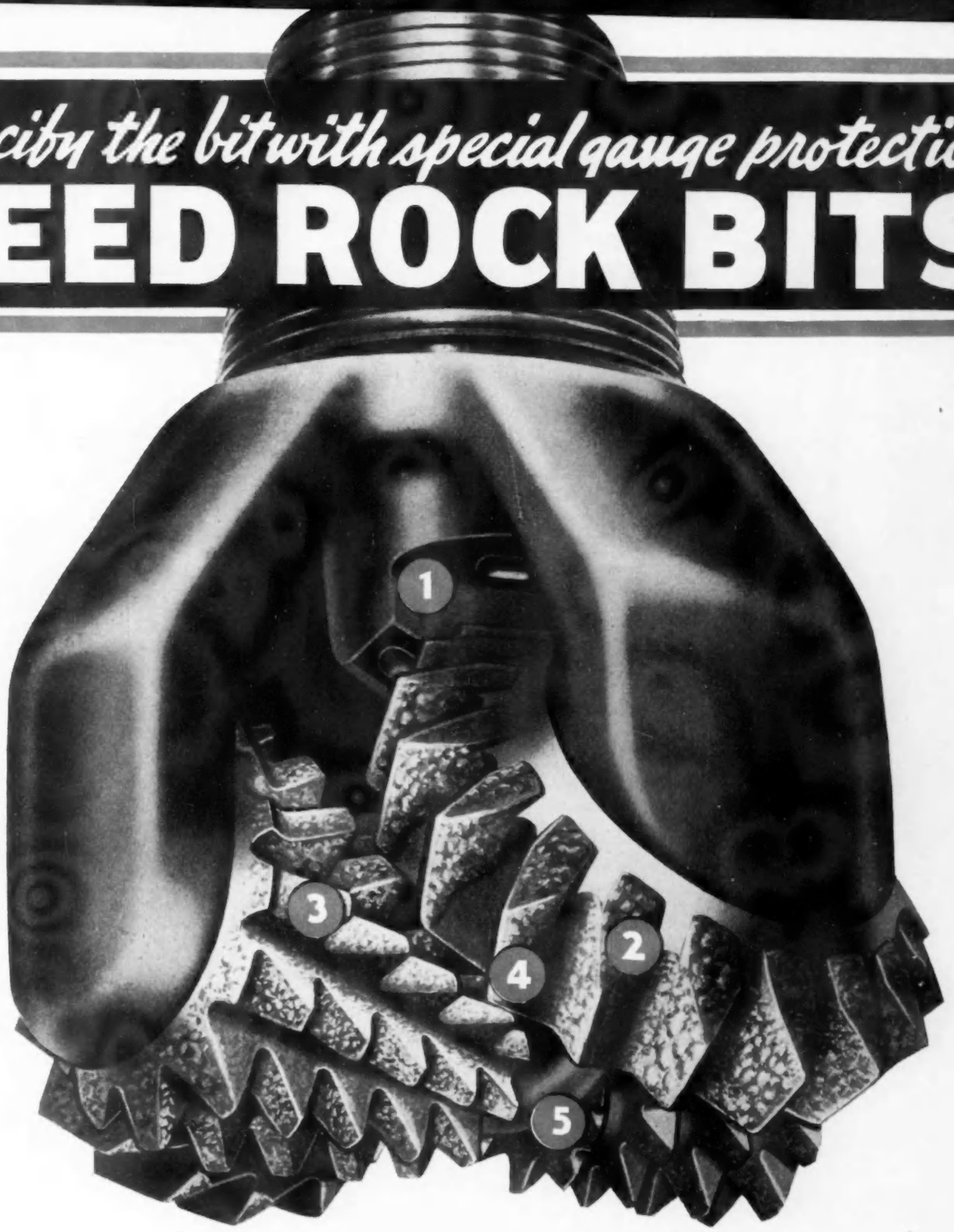

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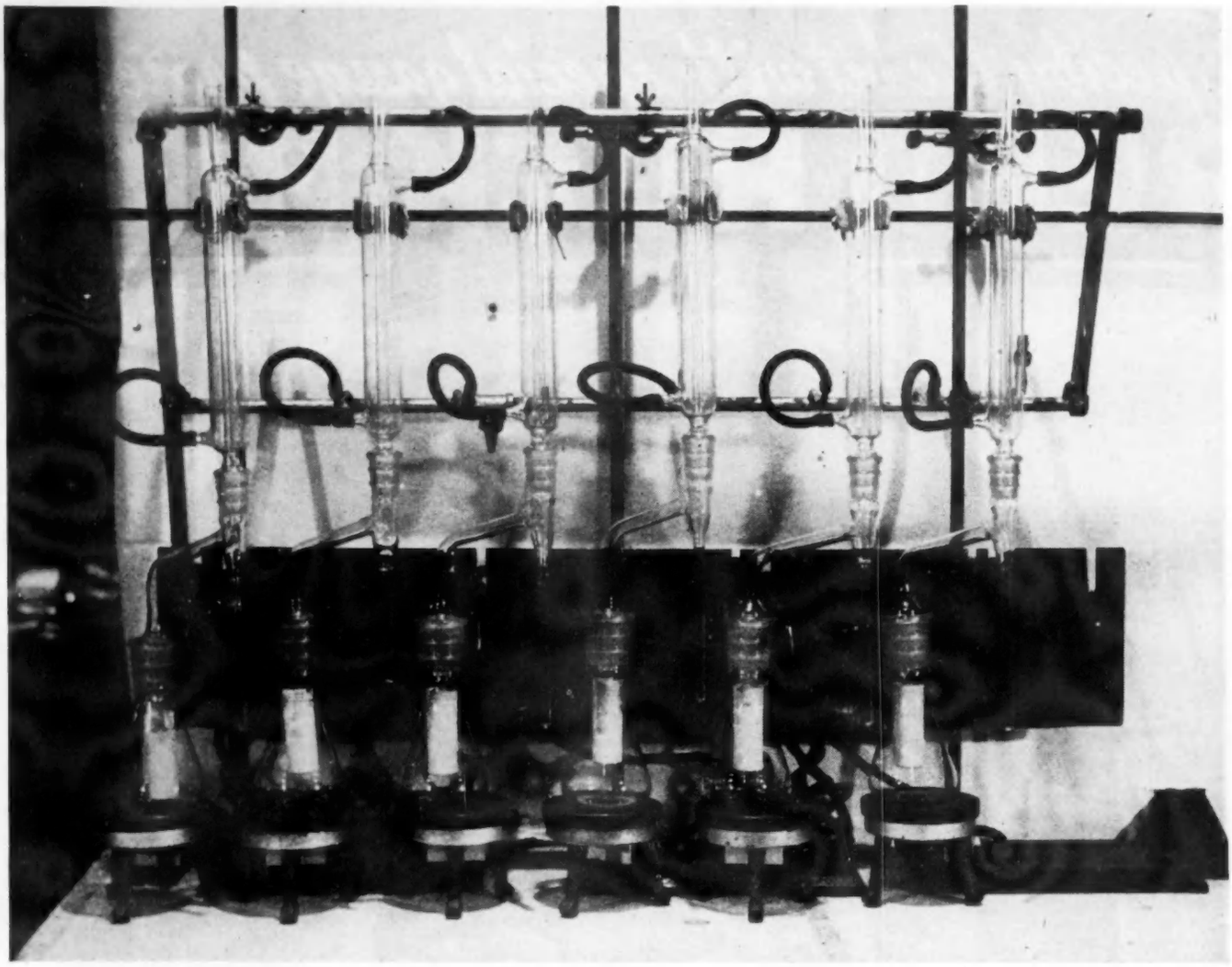

FIGURE 3
Extraction apparatus showing banks of the units

combined weight of oil and water in the core. By subtracting the volume of water collected in milliliters from the weight loss on the sample due to extraction, the weight of oil in the core is obtained. By dividing this weight by the density of the oil at the formation temperature, the volume of oil in the sample is obtained.

In calculating the saturations in terms of barrels per acre-foot the volumes of oil and water in a given bulk volume are required. The equation for these saturations is as follows:

$$(2)\ \text{Barrels per acre-foot} = 7758 \times \frac{\text{Volume of liquid in sample (oil or water)}}{\text{Bulk volume}}$$

In order to obtain the saturations in terms of the percent of the effective pore space the following equation is used:

$$(3)\ \text{Percent saturation} = 10{,}000 \times \frac{\text{Volume of liquid in sample (oil or water)}}{\text{Bulk volume x percent porosity}}$$

In the discussion so far it has been assumed that the volume of water collected in the trap is equal to the volume of brine in the pores. This is not true since the dissolved salts contained in the brine are not distilled into the water trap and consequently the volume read in the trap is less than the volume of brine in the formation. Since the water in the core may be a combination of connate water and contaminating water, as for example from the drilling fluid, the salt concentration in the mixture of waters will not be a constant and it will be difficult to make in general an accurate correction on the water collected to water in place. If it is assumed that the salt concentration is a constant, a correction can be made. A known volume of the brine in question should be pipetted into an evaporating dish and weighted. The water should be evaporated and the loss in weight determined. The correction factor by which the volume of water collected must be multiplied is then calculated as follows:

$$(4)\ \text{Correction factor} = \frac{\text{Volume of brine, ml.}}{\text{Evaporation loss, gms.}}$$

In the case of cores containing a live crude, the evaporation losses may introduce an appreciable error in the oil saturations obtained in the weight loss method already described. In the determination of oil recoveries on water-flooding experiments performed in this laboratory it was found that the produced oil lost some of its light ends during the process and a method was devised for converting the volume of oil collected back to the volume of original oil in place. The method was as follows:

One hundred milliliters of the live crude is placed in a graduate and weighed. The light ends are allowed to evaporate off and the volume and weight recorded periodically. An inert gas such as nitrogen may be passed through the crude to hasten the process. Warming the crude near a light bulb will also hasten the process but it is necessary to bring the graduate and contents to some standard temperature before taking any readings. From the data so gathered a

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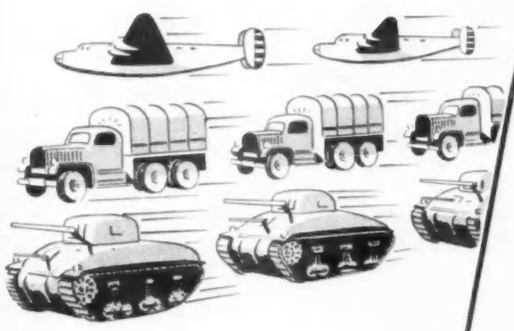

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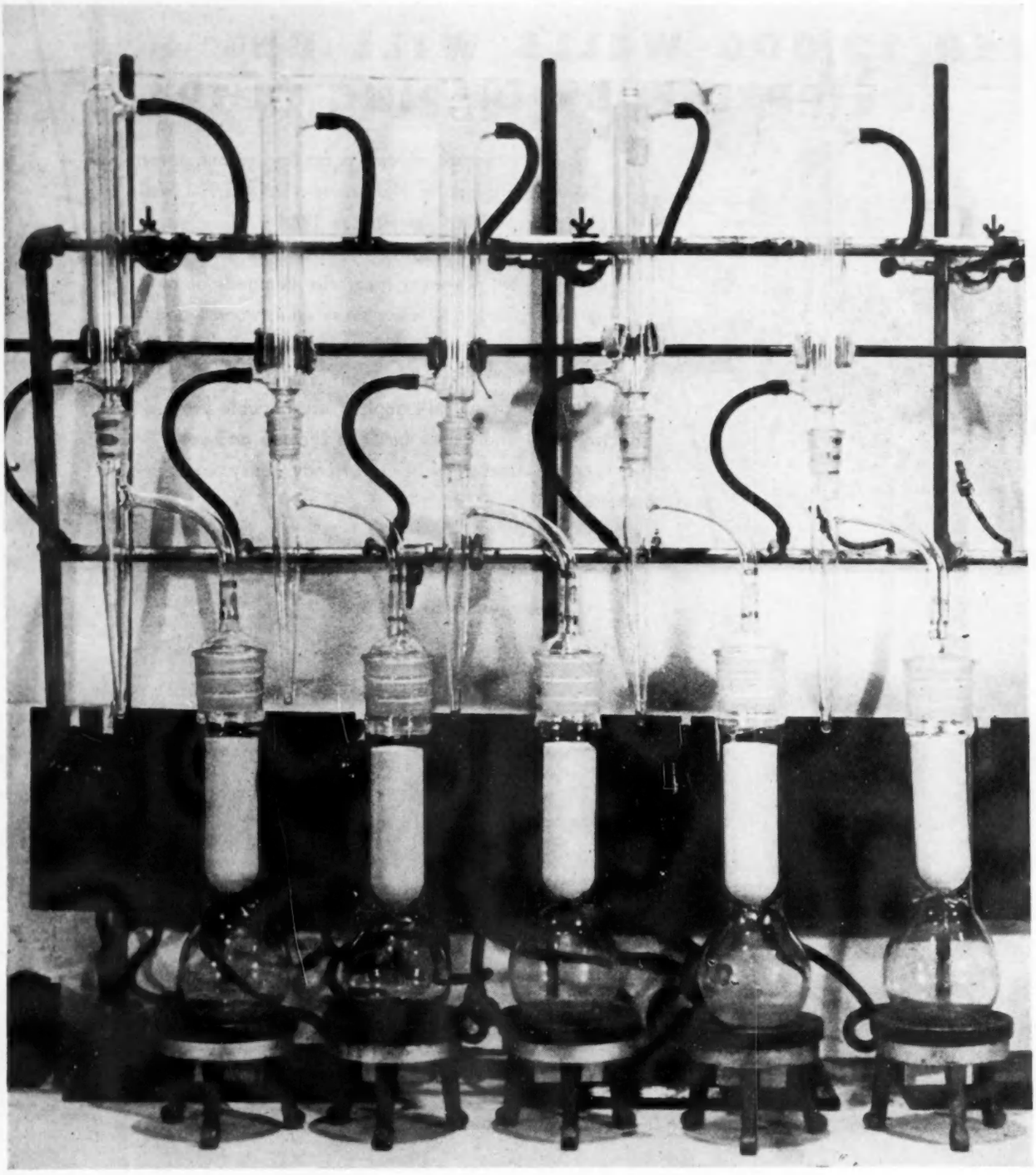


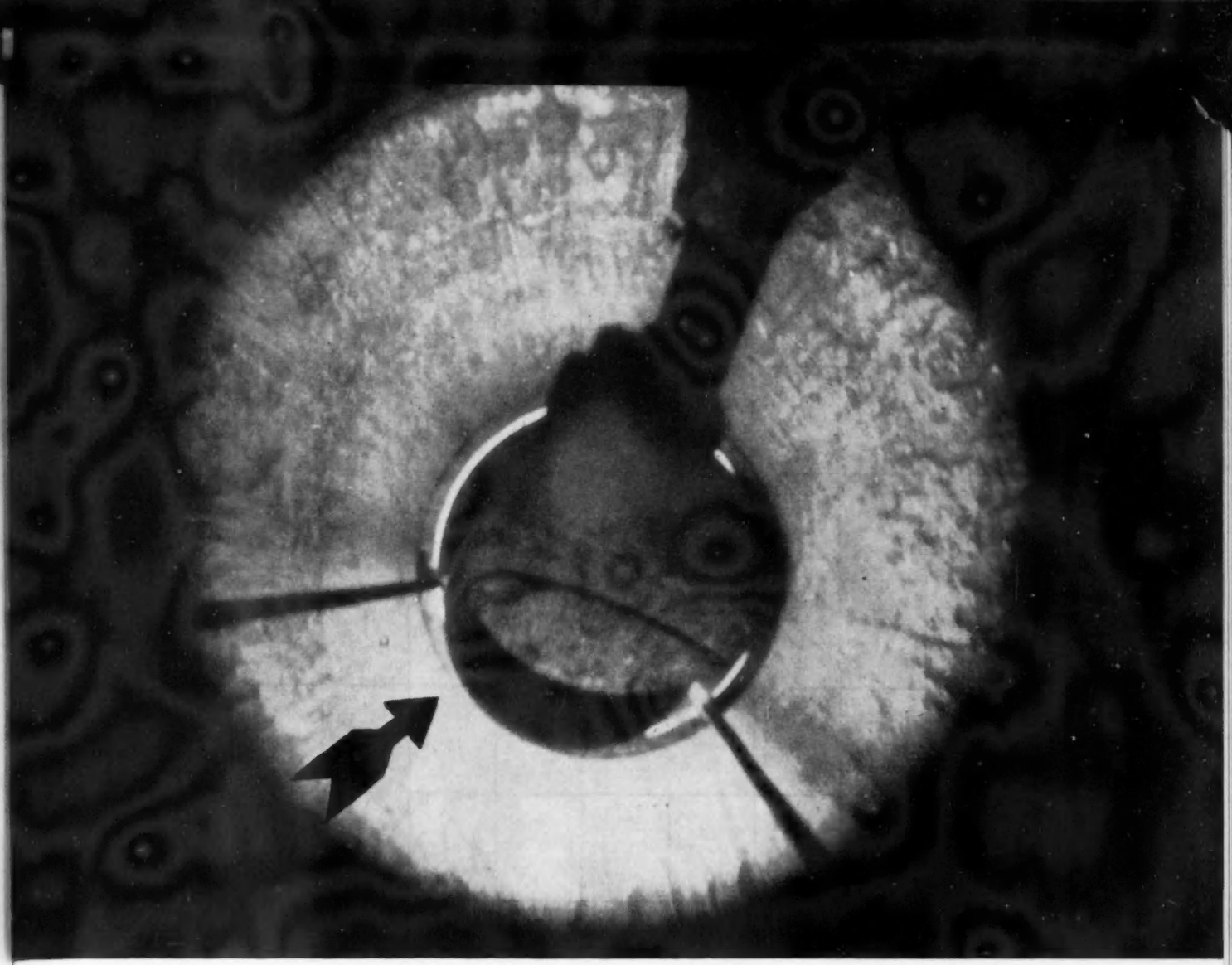
FIGURE 4

Banks of extraction units. All the apparatus is made of pyrex glass and is fitted with standard taper ground glass joints

density-versus-percent-volume-loss curve is plotted. It is this curve which is used to make the correction for evaporation losses. If the density of the collected oil is known, reference to the graph will indicate the loss in volume entailed during the recovery and collection process. Typical curves of the type on Bradford crudes are shown in Figure 5. The Ryder-Scott Company of Bradford use such a method in their laboratories to correct their saturations back to volume of live crude in place.

This type of correction can be applied to the oil collected in the saturation method described in this report. After the extraction is complete the flask containing the extracted oil and solvent is fitted with a distilling head and a condenser and most of the solvent driven off by moderate heating. The remaining solvent is very gently blown from the flask by a stream of air. It is very essential that the contents of the flask are not overheated. The flask with the residual oil is weighed to the nearest milligram and the weight of the empty flask subtracted to give the weight of residual oil. The density of this oil is determined by a capillary pipette which is 5 inches long and has an I. D. of 1.5 millimeters. These pipettes may be made by drawing out a tip on a piece of capillary tubing and placing a mark at some convenient position on the tubing. The volume can be calibrated with water.

After the flask and contents have come to some standard temperature (the same temperature at which the density-versus-volume-loss curve was obtained) a sample is removed from the flask and its density is measured. Since the weight and density of the oil in the flask are known, its volume may be calculated. From the density of this oil and the



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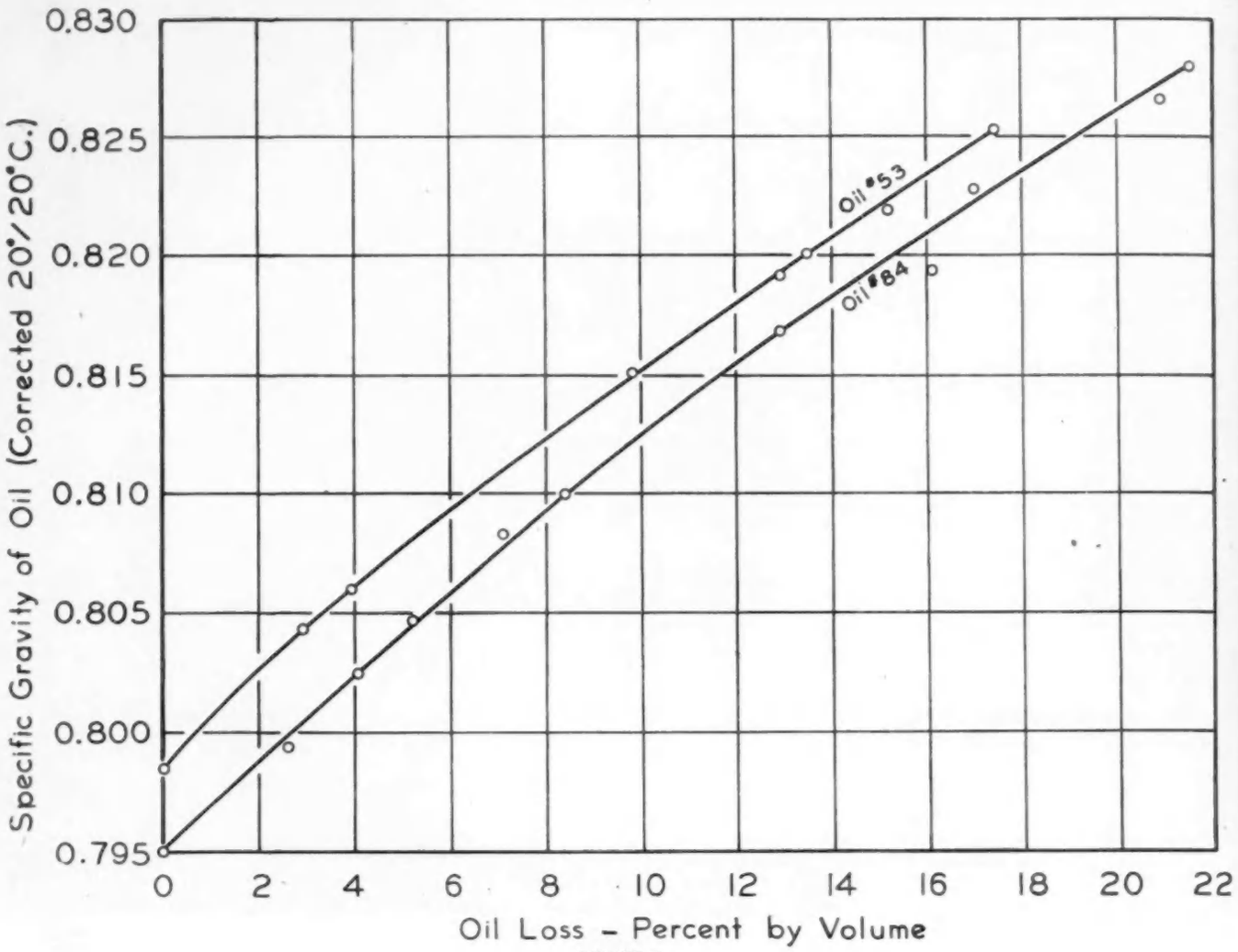


FIGURE 5

density-versus-loss curve (see Figure 5) the volume correction is obtained and volume of live oil in place is computed.

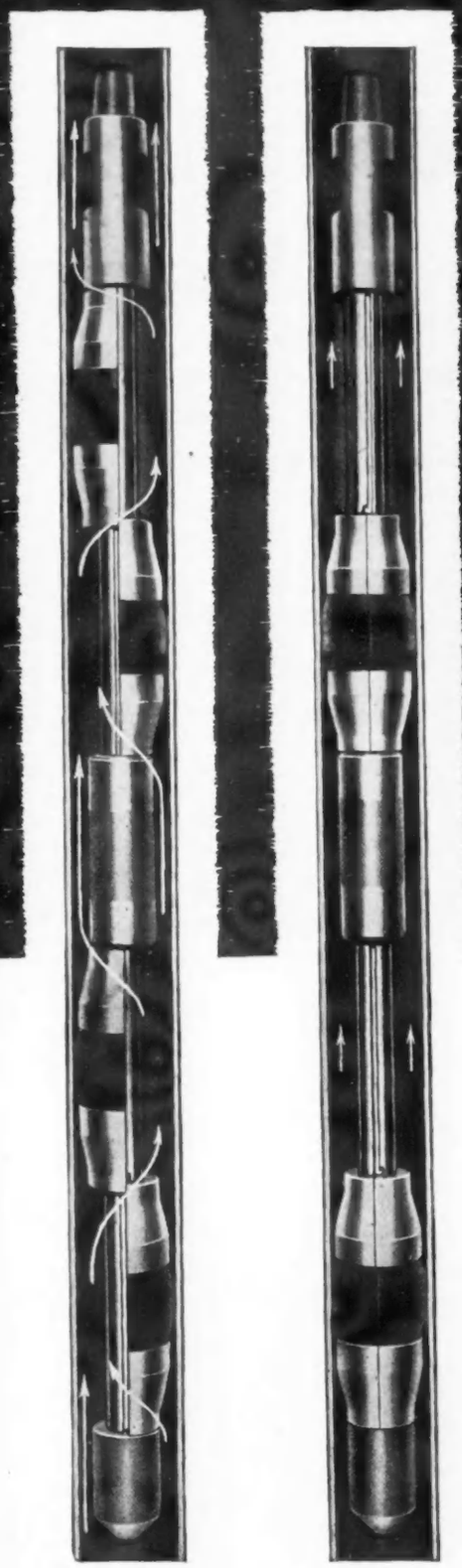
It should be pointed out in making these weighings that great care must be exercised so as not to rub or polish the glass to clean it since a charge accumulates on the surface and gives very erratic weighings. In cleaning the oil from the tip of the pipette only a minimum of wiping with a piece of cheesecloth should be done.

The solvent used in this laboratory is a special naphtha cut called Amsco heptanes obtained from the American Mineral Spirits Company of Carteret, New Jersey. The boiling range is 199 to 212°F. Other solvents could be used but the following are considered essential requirements in this laboratory: Immiscible with water; miscible with the oil; boiling point near that of water; inert towards formation samples; nontoxic, and low in cost.

Chlorinated solvents may be used but their toxicity and the possibility of hydrochloric acid formation due to hydrolysis and its action on the core sample make them undesirable. The requirement that the boiling point be near that of water is important from several standpoints. Too high a boiling point means that it will be difficult to remove the solvent from the extracted sample. Too high a boiling point also means that excessive heat will have to be used to carry on the extraction and the water vapor will be forced to condense high up in the condenser tube by the higher-boiling solvent vapors. This will make it difficult to collect all the water in the trap. The higher temperature causes the water to be removed from the sample of core more rapidly, which is an advantage. In fact, the rate of water removal for a given rate of boiling for a series of solvents should vary as some direct function of the vapor pressure of water at the boiling point of the solvent in question. Actually the removal of water from the core samples is analogous to the evaporation of water from a porous body by a hot wind. The higher the temperature of the wind, the higher the vapor pressure of the water, the greater the diffusion rate from within the pores and consequently the greater the rate of removal of the water. In the case of this extraction, the wind is a hydrocarbon vapor. It should not be supposed that it is necessary to have a solvent boiling above water to remove the water from the samples. Solvents with lower boiling points can be used but the time necessary for water removal will be longer.

Since the process involves extraction of oil in addition to water removal, it is necessary that the crude be compatible with the solvent. Tests should be made to determine this and if necessary made near the boiling point of the solvent. The extraction process using this method takes place at a higher temperature than if it were carried out in a soxhlet extractor. From this standpoint the extraction process should be more rapid since rate of diffusion and compatibility are increased.

The methods of determining oil and water saturations just described have been used in the Petroleum Production Research Laboratories at The Pennsylvania State College for some time and have been found to be very satisfactory. The methods have been checked with blanks and found to give an accurate measure of the core contents. Using a bank of extractors the tests are as rapid as any being commonly used in the industry today. The simultaneous preparation of samples for permeability and porosity measurements is a further advantage of the methods.



DOWNSTROKE
One-half of rubber slides upward, giving exceptionally large fluid passage between rubbers.

UPSTROKE
Rubber half drops back into position, closing fluid passage and lifting load.

MISSION VALVELESS SWABS

SAVE MANPOWER
SAVE MATERIALS
. . . important in total war

1. FASTER SWABBING SAVES MANPOWER

The Mission split-rubber principle provides greater fluid passage which makes for faster swabbing under good conditions, and free falling even when viscous or gas laden fluid is swabbed.

Since the valveless Mission Split-Rubber Swab falls under conditions that stop ordinary swabs, it falls to the bottom and lifts its load more often.

It always lifts a load as there is no valve to stick open or cut out. Rubbers will seat even if blocked open one-half inch.

2. ECONOMY OF MATERIALS

Swab rubbers loosen on the down stroke to reduce friction and increase the life of the rubbers. Rugged rubbers make for longer life, using less of this critical war material.

The Mission swab gives longer service without trouble because of its rugged design with no valve to cut out. Extremely simple construction makes servicing easy.

Mission swabs may be used as paraffin scrappers by simply removing the rubbers—another material saving important in total war.

SAVE TIME, MONEY AND MATERIALS
BY USING MISSION VALVELESS SWABS

FASTER SWABBING
. . . WITH SAFETY

MISSION MANUFACTURING CO.

HUMBLE ROAD, HOUSTON, TEXAS
EXPORT OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK

Improved Sucker Rod Rack Facilitates Handling of Singles

Sloping rack with ingenious tier spacing device permits proper laying down of rods as they are pulled from derrickless well with mast or simple A-frame rig, while railed walkway speeds handling from elevator

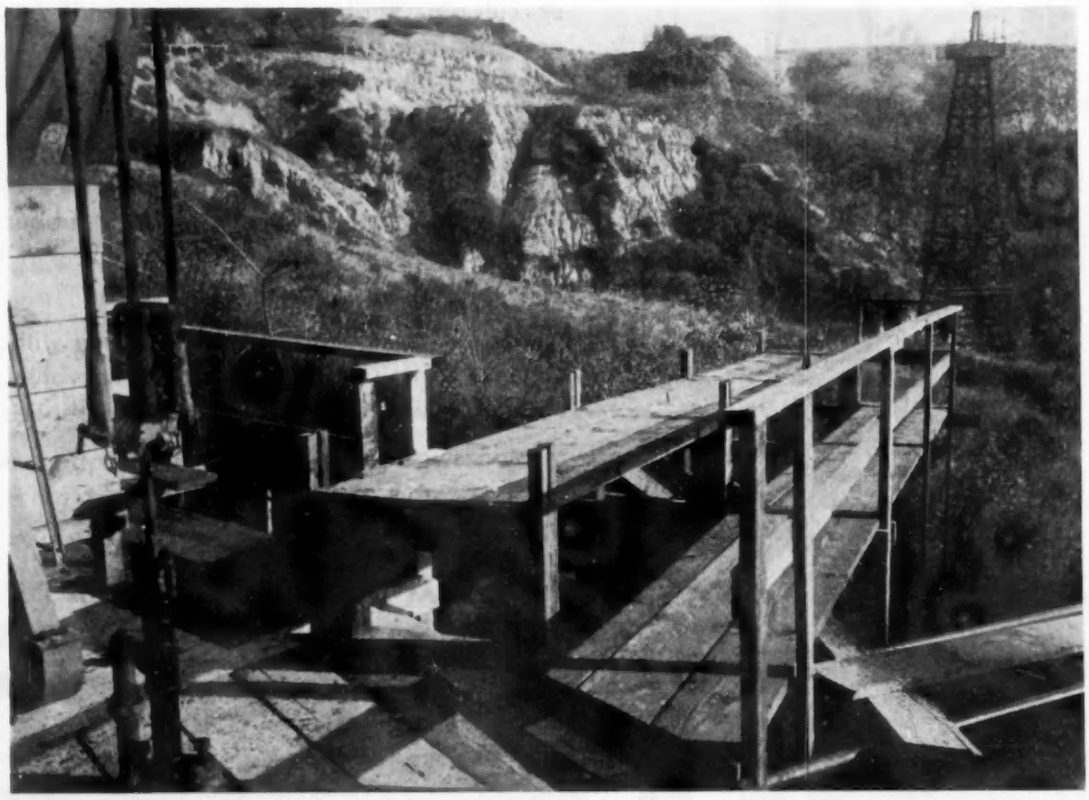
THE current trend toward doing away with derricks on completed wells has created several problems, one of them being the proper care and handling of sucker rods when the well is pulled. Portable pulling units of the later types are equipped to suspend the rods in the mast, much as is done with a derrick job, but simple masts of the single pole type and used in conjunction with a truck-mounted pulling unit provide no means of handling rods other than laying them down on the ground. Preferring not to lay rods down across blocks laid on the ground as is usually done, one production company devised an inexpensive, sloping rack on which the rods could be laid out free from injury by dirt or mishandling, yet at the same time kept in neat layers to facilitate inspection and counting.

Made of 2-inch planking, the rack is 3½ feet wide and approximately 30 feet long, and extends outward from the well at a gentle slope to provide drainage and run-off for oil remaining on the rods. At intervals of approximately 10 feet along each side rack supports are nailed 2x8-inch uprights which project above the level of the rack about 10 inches. A 1-inch slot is cut down the center of this exposed portion of each upright, as shown in the photograph.

Rods are pulled from the well and laid out flat on the rack, and upon completion of a full layer of rods, a ½- or ¾-inch pipe or piece of sucker rod slightly longer than the width of the rack is laid in each slot, after which another layer of rods may be laid out. To speed up "tailing" the rods out along the rack, a runway, built at a slightly lower level, extends out beside the rod rack. The difference in level between the walk and rack materially speeds up the work as it is much easier for the man to place or pick up rods.

Indicating the possibilities of this type of rack, the illustration shows how it may be adapted to irregular terrain, making use of otherwise useless space. This is an important factor on well sites where the single roadway leading to the well usually is traversed with difficulty—it at all—when a string of rods has to be laid out in the drive, the latter being the only space available in which to lay them.

Built with slope to carry drainage from rods away from well site, this timber rack shown below provides flat support for bottom tier of rods, while subsequent layers are laid out on stretchers carried in slots of restraining uprights.



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Hitherto Unexplored Areas Best Bet for Finding New Reserves

Oil industry must not only increase wildcatting above current rate but discoveries for remaining months must be better than January-February if reserve-discovering responsibility is met

By L. J. LOGAN, Associate Editor

RESULTS of exploratory drilling in February emphasized these important facts:

1. The industry must further increase wildcatting above the current rate if it is to achieve the expansion sought by the government, and clearly needed.

2. Even achievement of the government goal of a 25-percent increase in wildcatting in 1944 would not be particularly gratifying unless discoveries of remaining months should prove generally better than those of January and February.

3. Development of new petroleum reserves is a difficult, patience-trying job, involving hundreds of dry holes and numerous mediocre discoveries for every first-class field found.

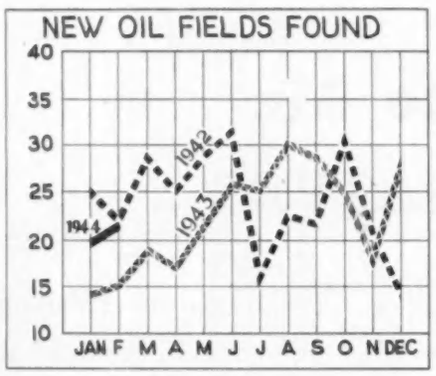
4. Finally, and more encouraging: The reserve-discovering responsibility is being and henceforth should be further facilitated by stepping out into promising but hitherto practically unscratched regions, of which Alabama, Mississippi, and Florida are current examples.

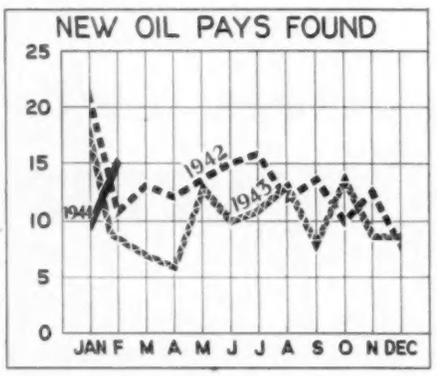
So far this year, total exploratory effort has been only about 8 percent greater than that in the early part of last year, compared with the goal of a 25-percent increase. Continuation of this 8-percent increase in remaining months would result in only about 3900 exploratory well completions in 1944, compared with 3600 last year, instead of the goal of 4500. Furthermore, although the proportion of successful tests has run about the same as last year, the discoveries of 1944 so far have been predominately of poor calibre.

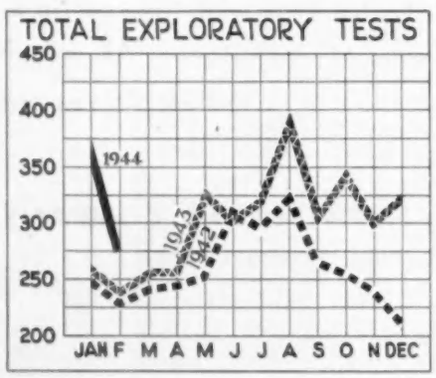
Completions of exploratory tests in the United States averaged 67 per week in the first 9 weeks of this year compared with 62 weekly in the first 8 weeks of last year, an increase of 8.1 percent. This expansion reflected intensified wildcatting only in some states and districts, including California, Colorado, Kentucky, North Louisiana, South Louisiana, Mississippi, Montana, and most districts of Texas, including Eastern, North, West Central, West, Upper Gulf Coast, and Lower Gulf Coast. Exploratory drilling ran at about the same rate as last year in Kansas, Michigan, Missouri, New Mexico, Wyoming, and the Texas Panhandle, and was under last year's rate in Arkansas, Illinois, Indiana, Iowa, Nebraska, Oklahoma, Southwest Texas, and South Central Texas. In general, relative success in the different states and districts in proving new reserves, as compared with last year, has been roughly in proportion to the above changes in trends of total exploratory wells drilled.

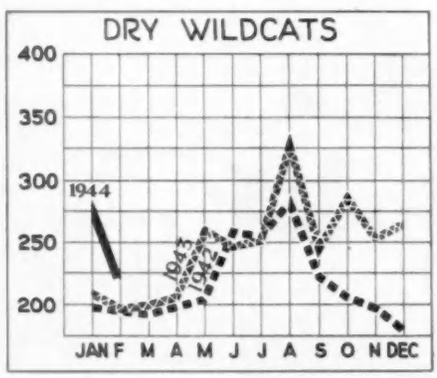
Of this year's exploratory well completions in the United States, 15.9 percent resulted in discovering new oil, gas, or condensate fields, establishing new pay horizons in established fields, or providing major extensions to fields. This proportion of successful tests was approximately the same as the 16.1 percent recorded for the corresponding period last year.

With more wells being completed and the ratio of successes about unchanged, this year has brought some increases in the number of total discoveries. Total oil discoveries show a substantial gain, as more fields have been found, although fewer new pays. New sources of condensate, both fields and pays, although relatively few, have increased. Gas discoveries include more new fields than last year but the same number of new pays. Total field extensions have fallen a little under those of last year, with those involving oil fields lower, gas fields the same, and distillate fields up.







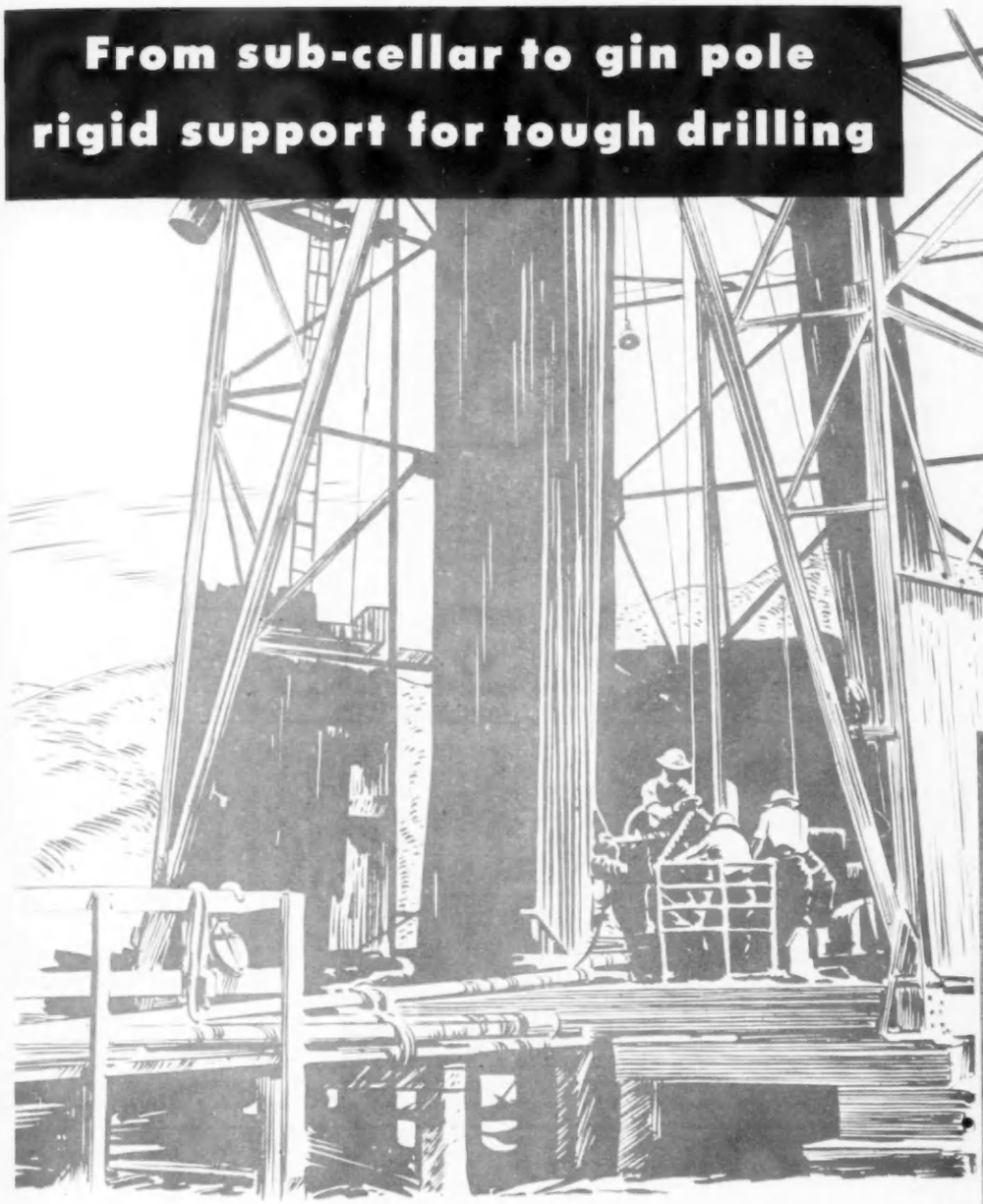


Mississippi Discovery Important

Outstanding among discoveries of February were those of one new oil field each in Mississippi and Alabama, which further emphasized the apparently important petroleum possibilities of the hitherto superficially explored Southeastern States.

The new field in Mississippi, known as Heidelberg and located in hitherto unproductive Jasper County, tentatively is rated as a major oil discovery. Although drilled to 6578 feet in red shale, the discovery well, Gulf Refining Company's Ellen Morrison 1, SW SE 30-1n-13e, was completed in Eutaw sand (Cretaceous), at 4958-4968 feet, through 60 perforations in the 7-inch casing set at 5075 feet. The well flowed initially 408 barrels of 19-gravity pipe line oil daily through 3/8-inch choke, tubing pressure 95 pounds, before being shut in for storage. Eutaw was topped at 4740 feet, Marine Tuscaloosa at 4992, and Davis zone at 6024, but no shows of importance were recorded in the latter two formations. The Eutaw already has proved its importance in Southern Mississippi by yielding good production in

From sub-cellar to gin pole rigid support for tough drilling



Complete first hand knowledge of all drilling and production problems is essential to the proper design of well drilling equipment. The factors of safety, efficiency, and dependability must be considered as well as speed of operation and economy of production. Wherever there is oil, Emsco equipment has earned confidence and approval the world over.

Emsco Steel Derricks have many advantages developed from a thorough knowledge of the needs of the oil industry. They are available in all A.P.I. sizes and adhere rigidly to A.P.I. specifications. For extraordinary operating conditions, special sizes as to height, base dimensions, etc., may be obtained on special order. The V window is braced with a horizontal channel at the head of the V which offsets the tendency of the girt to deflect inward when subjected to heavy loads from the catline. Derrick bracing is extremely efficient in carrying load stresses to the foundation. Tubular reinforcing, clamped inside the angle of the derrick leg, gives maximum strength and rigidity. After drilling, its removal leaves an efficient and economical production derrick. Splice plates are designed to make a very sturdy connection and hold the legs firmly in alignment. While these are merely a few of the features of Emsco derricks, they are typical of the engineering skill employed in developing a derrick which has stood the test of tough drilling operations.

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New Oil and Gas Fields and New Pay Horizons Discovered in United States in February, 1944

Also Major Extensions to Established Fields

County	Field	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Preliminary Estimates of Reserves Found; Remarks
		ALABAMA—New Oil Field									
Choctaw		Hunt oil Co.'s A.R. Jackson 1, sw ne 2-10n-4w, 15 mi sw Butler; 15 mi e Eucutta fld, Miss		2-15-44	5380	2560-2800	Selma chalk, Cre.	F 60	20.0		Alabama's first field. Same pay in Cary, Tinsley, and other Miss. flds. PB after failure in Tuscaloosa.
		ARKANSAS—Oil Field Extension									
Columbia	W. Atlanta	Tidewater-Seaboard's L. H. Pierce 1, 10-18s-20w, 3 mi w of W. Atlanta fld.		2-15-44	8290	8282-8287	Smackover li., Jur.	F 85; 1/8"	51.0		3 mi fr W. Atlanta fld., could be new pool; appears important
		CALIFORNIA—New Oil Fields									
Fresno	Lanare	Amerada's Calif. Lands 65-15, sw nw se 15-17s-18e	11- 2-43	2-10-44	8060	8018-8060	Helm sd., Eoc.	F 104	29.3	Ant.; Seis.	May be extens. to Helm fld. In dist. of thin, lenticular oil sds.
Kern	Kern Bluff	Standard Oil Co.'s 2-10, ne sw sw 21-29s-29e	1-27-44	2-17-44	1014	990-1014	Chanac sd., Eoc.	P 11	13.6	Ant.; Geol.	Area extent may prove important. Only 11-bbl. well, but type of production like that of adjacent great Kern River fld.
Kern	Mt. Poso, W.	Dwight G. Vedder's 3-18, se nw se 18-27s-28e	12-28-43	2-19-44	2508	2402-2463	Vedder sd., Mio.	P 125	16.3	Fault play, Geol.	Possible 200 acres plus productive.
		CALIFORNIA—New Gas Fields									
Fresno	Jacalitos	Standard Oil Co.'s 67-17E, ne sw se 17-21s-15e	11- 4-43	2- 1-44	3960	3700-3760	Temblor sd., Mio.	5 miln.; 5/8"	Gas	Ant.; Seis., Geol.	Importance yet to be determined.
Glenn	Chico	Richfield's Afton Comm. 1, ne se se 34-19n-1w	12- 2-43	2-13-44	3190	2648-2660		6 miln.; 5/8"	Gas	Ant.; Seis.	Importance yet to be determined.
Glenn	Hamilton	Superior Oil Co.'s Knight 1, ne sw ne 3-21s-2w	7-24-43	8-19-43	3690	3659-3664		5 miln.; 5/8"	Gas	Ant.; Seis.	Importance yet to be determined.
		COLORADO—New Oil Field									
Larimer	Clarks Lake	Amerada Pet. Corp. & Alder Oil Co.'s Fred H. Hartshorn 1, se ne sw 15-9n-68w, 3 mi se of Wellington fld.	9-10-43	2- 8-44	6510	5897-5969	Muddy sd., Cre.	P 50	33.0	Dome; Seis.	Estimated black oil reserve 250,000 bbls. Well had water in Dakota and Sundance. Wellington fld, 3 mi to nw, found 1923, now near depletion, had yielded 5,134,146 bbls. to end of 1943, and of 32 wells originally, 22 were still producing total 196 bbls. day fr Muddy sn.
		ILLINOIS—New Oil Field									
Jefferson	Divide, West	Texas Co.'s Green 1, e/2 se se, 15-1s-3e, 2 mi w Divide pool	1-11-44	2-29-44	2862	2795-2801 2750-2758	McClosky li., Miss.	P 85			May join Divide (McClosky li.) pool; no dry holes between. Dry McClosky test is 3/4 mi sw. No tests yet for 3 mi nw and n.
		ILLINOIS—Oil Field Extensions									
Madison	Marine	Sinclair-Wyoming's Hess 1, nw sw 10-4n-6w, 1 mi n Marine pool	1-31-44	2-29-44	1768	1718-1768	Devonian li., Devo.	F 373			Best well to date in pool. Nearest dry holes 1 1/4 mi ne and 2 3/4 mi. n.
Wabash	Patton, West	Skiles's Schmitt 1, 20-1n-12w, ne nw se	1-16-44	2-15-44	2351	2331-2351	McClosky li., Miss.	P 345; 15 wtr			
Wayne	Mill Shoals	Robinson-Puckett's Felix 1, 12-3s-7e, se ne se	1- 7-44	2-15-44	3258	3240-3258	Aux Vases sd., Miss.	P 129			Extends pool 1 1/4 mi n.
		ILLINOIS—New Oil Pays									
Coles	Mattoon	Beckman's Herman 1, ne sw nw, 25-12n-7e	1-30-44	2-29-44	2064	2048-2064	Rosiclare sd., Miss.	P 21			Probably small.
Edwards	Albion, East	Maybee's Franklin 1, sw nw se, 20-2s-14w	11-20-43	2-22-44	3160	2910-2918 2964-2973	Paint Creek sd., Miss. Bethel sd., Miss.	P 16			Prospects unfavorable, as this well had small I. P. and both these pays penetrated in most earlier wells in pool without yieldg oil.
Wabash	Patton, West	Shell's Woods 1, 20-1n-12w, sw sw sw	1-15-44	2-15-44	2112	1542-1555	Biehl sd., Penn.	P 50; 34 wtr.			Previous wells in pool found Biehl oil—barren.
White	Concord	Great Lakes Carbon Corp.'s Tully 1, 21-6s-10e, se nw se	1- 7-44	2-15-44	2646	2628-2638	Weiler sd., Cypress (Miss.)	P 80; 25 wtr.			Probably small. Some wells in pool pentrtd Cypress without reporting oil.
White	Phillipstown Consold.	Gulf's Garfield-Parsons 1, sw sw sw, 7-4s-14w	1-13-44	2-29-44	2826	2784-2816	Paint Creek sd., Miss.	P 60			Adjacent wells to s pentrtd Paint Creek w'out reprtg oil.
		INDIANA—Oil Field Extension									
Gibson	N. Owensville	Thos. C. Knight's Morton and Florence Woods 1, nw nw ne, 30-2s-11w		2- 9-44	1987	-1987	Cypress sd., U. Miss.	P 40			1/2 mi e extension.
		KANSAS—New Oil Fields									
Barber		Deep Rock's Skinner "B" 1, c w nw se, 29-31s-14w		2-11-44	4640	4624-4640	Viola li., Ord.	F 278	36.0	Ant.,trnd; Sur.	Big structural feature covers 1/3 of twp. May become major pool, but not yet known.
Barton		F. C. Koch's Schauf "B" 1, c n sw se, 2-16s-12w		2-10-44	3344	3334-3337	Arbuckle li., Ord.	S 720		Strat.trap;Sub.	Undetermined value.
Pawnee		Champlin Ref. Co.'s Marcotte 1, se ne sw 15-10s-20w		1-28-44	3764	3756-3764	Arbuckle li., Ord.	S 900		Strat.trap;Sub.	Undetermined value. Probably small.
Rooks		Continental's Brueggeman 1, ne 5-10s-20w		2-18-44	3843	3824-3843	Arbuckle li., Ord.	F 3000 Ph.Pot.		Nose; Core Drlg.	Undetermined value.
Rooks	Zurich Townsite	Cities Service's Sikes 1, swc 27-9s-19w		2-16-44	3668	3644-3650	Arbuckle li., Ord.	F 1326 Ph.Pot.		Dome; Core Drlg.	Undetermined value.
Stafford	Richland	Atlantic's Niel 1, nw ne 27-24s-14w		2-23-44	4240	4225-4232	Arbuckle li., Ord.	F 221; 31 wtr.	37.0	Ant.;Seis.,Sub.	Small pool, probably covers 320 acres.
		KENTUCKY—New Oil Pays									
Henderson	Geneva	Lacy et al's Wood 6, 16-Q-22		2- -44	1797		Waltersburg sd., U. Miss.	P 80			Orig. pay of pool Tar Springs sand.
Henderson	Geneva	Wood et al's Bauldauf 6, 16-Q-22		2- -44	2265		Cypress sd., U. Miss.	P 50			
		SOUTH LOUISIANA—New Oil Pays									
Calcasieu	Starks	W. T. Burton's Lutcher-Moore 10, 2005 ft s 00°; 17' w, then due w 1980 ft. fr ne c 13-9s-13w	12- 1-43	1-21-44	11649	8040-8060	Frio sd., Olig.	F 113; 3/32"	39.1	Sub slt dm flnk dr.	Probably adds 1,000,000 to 2,000,000 bbls. to reserves.
Plaquemines	W. Bay	Gulf's State-West Bay 9-192, 2165 ft. w on nl sec 2 fr ne c & 330 ft s at ra in 2-23s-30e	11- 8-43	2- 3-44	10464	10442-10452	Miocene sd., Mio.	F 581; 3/16"	30.8	Sub., slt dm flnk. dr.	May add 1,000,000 bbls. to reserves.
		SOUTH LOUISIANA—Oil Field Extension									
Evangeline	Pine Prarie	Hassie Hunt's Crowell-Spencer 3-C, nw flnk, 340 ft n, 337 ft w of se c sw 27-3s-1w	10-24-43	2-20-44	10816	9490-9522 9540-9570	Sparta sd., Eoc.	F 235; 3/4"	38.5	Slt. dm flnk dr.	Probably adds 2,000,000 bbls. to reserves.
		MICHIGAN—New Oil Field									
Montcalm	Home	Stewart & White's Jorgensen 1, c ne ne 14-12n-6w, Home Twp, 3 mi ne Edmore	10-26-43	2-28-44	3477	3474-3477	Dundee li.-dolo., Devo.	F 92; 3/4"	48.0	Ant.; Geol.	Prod. dropt to 50 bbls. with 10-20% cut after 1st wk; area probably confined to 300 acres or less.
		MISSISSIPPI—New Oil Field									
Jasper	Heidelberg	Gulf Ref. Co.'s Ellen Morrison 1, sw se 30-1n-13e		2- 7-44	6578 (Red Shale)	4958-4968	Eutaw sd., Cre.	F 408; 3/8"	19.0		May become major fld. Same pay as in Pickens fld and one zone of Tinsley fld. However, no promising shows found in Tuscaloosa, below 4992 ft (one of pays at Tinsley) or in Davis zone below 6024 ft.

■ CONTINUED ON PAGE 37

New Oil and Gas Fields and New Pay Horizons Discovered in the United States in February, 1944

Also Major Extensions to Established Fields

• CONTINUED FROM PAGE 36

Musselshell.	Gage.....	**MONTANA—Oil Field Extension** Northern Ordance Inc.'s Darr 1, c se ne 14-9n-26e, several mi n of Gage, Mont.; 1¾ mi ne of discovery well.	12- 7-43	2-17-44	6125	6087-6125	Amsden sd., Penn.	F 358	33.9	Dome; Drlg.	1¾ mi ne discovery well, which pumped only 25 bbls. Devil's Basin fld, nearest to Gage, prod. 20,422 bbls from 3 wells in Amsden, all now adnd.
Lake.....	.....	**OHIO—New Gas Field** Benedum-Trees' N. S. Hawgood 1, Lot 10, Mentor Twp.....		2-15-44	3515	3021-3026	Clinton	F 1/10 miln.			
Logan.....	E. Crescent...	**OKLAHOMA—New Oil Fields** Gulf's Prichard 1, c nw nw 22-17n-3w.....		2-14-44	6330	4692-4717	Layton sd., Penn.	F 81; 2⅝"	39.6	Dome; Seis.	Undetermined, but probably small.
Payne.....	.....	Sun Oil's Morgan 1, ne ne sw 10-19n-5e.....		2- 3-44	3678	3566-3626	Wilcox sd., Ord.	F 30; ½"	32.0	Ant., Sub.	Rather limited; dry holes ½ mi e and ¼ mi ne.
Oklahoma..	W. Edmond..	**OKLAHOMA—Oil Field Extension** Fox & Fox's Peterson 1, ne sw 9-14n-4w.....		2-11-44	7010	6894-6940	Hunton li., Devo.	F 726; 1"	41.0	Strat.trap;Sub.	Important; 1 mi n extensn; in Anakarko Basin, e rim.
Hughes....	Horn's Corner.	**OKLAHOMA—New Gas Field** Alladin Pet. Co.'s Austin 1, c sw nw 4-7n-10e.....		2-12-44	3641	3494-3498	Cromwell sd., Penn.	F 27 miln.	Gas	Any.; Sub.	Undetermined value.
Panola.....	Carthage.....	**EAST TEXAS BORDER—Distillate Extension** Continental's Burnett 1, Cheairs sur, ne of Carthage, 2 mi s Roger Lacy's Burnett 1, producer.		2-10-44	9307	5695-5735 4955-4985	Pettit, li., L. Cre. Glen Rose li., L. Cre.	F 96 & 8 miln. F 144 & 8 miln.	Dist.		Dual comp. Well to be further tested in Cotton Valley and Travis Peak.
Franklin...	New Hope....	**EAST TEXAS—New Oil Pay** Tide Water-Seaboard's J. P. Campbell 1, 440 ft out of swc 89½-ac tr, John Maximillian sur.	10-10-43	2-21-44	8707 pb 8333	8156-8190	Travis Peak sd., L. Cre.	F 250; ¾"	53.0	Geol.	New pay 300 ft. below Pittsburg sand, giving area 3 oil zones all comps. dual producers. Also gauged 259 bbls. 42 grav. oil, gas-oil ratio 261/1, natural on ¾", from Bacon (Rodessa) at 7260-7278 ft. Affords single well reserve 240,000-280,000 bbls.,
Archer.....	.....	**NORTH TEXAS—New Oil Fields** Martin Properties, Inc.'s John Purcell 1, 600 ft snl and 200 ft wel of 63¼-ac tr, Jose Ostane sur A-333.	1-27-44	2- 8-44	1154	1150-1154	Cisco sd, Penn.	P 68; 24 wtr.	39.2	Ant., Geol.	Not important due to presence of wtr in thin sd and close proximity of decisive dry holes.
Cooke.....	Woodbine....	Northern Ordance, Inc.'s Foy Davis 1, 330 ft wel and 330 ft se of nwl (MK&T Ry.) of 76-ac tr, Guadalupe de los Santos sur A-894 2⅝ mi se of Burk-Osborn 1-well, shallow pool.	12-16-43	2-16-44	4357	4350-4357	Strawn sd., Penn.	F 110; ¾"	28.0	Ant.; Geol.	Single well reserve 120,000-160,000 bbls; ⅞ mi nw of 5124-ft Ellenburger failure.
Young.....	.....	A. G. Bedner et al's T. D. Finley 1, 467 ft s and 1000 ft w of nec of s 152.8-ac tr, of sec 6, J. Poitevent-J. R. Everett sur A2074.	8- 7-43	2-20-44	4113	3940-3980 4035-4050	Bend li., Penn.	F 35; ½"	40.0	Ant.; Geol.	Not important. 1⅛ mi ne of A-1—well pool.
Jack.....	.....	**NORTH TEXAS—New Oil Pay** Panhandle Ref. Co.'s J. W. Kinder 1, 330 ft out of nwc sec 2667, TE&L Co. sur.	10-27-43	2- 9-44	2272	1850-1858	Strawn sd., Penn.	F 25; ½"		Geol.	2000 ft sw of a 1940 discovery pumper at 2130 ft. Unimportant and will be small pool by reason of nearby decisive failures.
Jones.....	.....	**WEST CENTRAL TEXAS—New Oil Field** Merry Bros. & Perini and Alder Oil Co.'s W. D. Hawthorne 1, 330 ft out of nwc of 120-ac lse, blk 3, J. W. McKissick sur No. 204, 3½ mi n Grogan pool.	8-20-43	2-22-44	2722	2533-2540	U. Hope li., Penn.	P 10; 50 wtr.	40.0	Ant.; Geol.	Not important.
Yoakum...	Wasson.....	**WEST TEXAS—Oil Field Extension** Woodley Pet. Co.'s M. E. Farmer-Honolulu 1, c sw sw sec 635, blk D, Gibson sur, 2 mi n Wasson fld.	11- 3-43	2- 9-44	5340	5230-5315	San Andres li., Perm.	P 134	28.0	Ant.; Geol.	Single well reserve 80,000-120,000 bbls. Producing contour flat with nearest well in fld proper; probably is "Finger" fr main fld, paving way for drlg of dozen or more wells.
Crane.....	Sand Hill.....	**WEST TEXAS—New Oil Pay** Gulf's Waddell 45, 554 ft out swc PSL 27, blk B-26, n offset to 4478-4605 ft producer in fld's reg pay.	1- 3-44	2-24-44	3230	3150-3230	McKnight li., Perm.	F 11,741; 2-4" lines	35.2	Comp'd Ant;. Geol.	Single well reserve 320,000-400,000 bbls. Logged main pay, highly porous, at 3150-90 ft, blew out at 3230 ft. is on ne edge fld, and opens important oil pay on flank this part of structure, with same zone yielding gas on apex of structure. May lead to oil fr Holt pay, between McKnight and Tubb zones downdip on structure.
Chambers..	S. Anahuac...	**UPPER TEXAS COAST—New Gas-Distillate Fields** Salt Dome Oil Copr.'s Ogden 1, 358 ft fr n&wl & 466 ft fr el of e 20-ac of 31-ac tr.	12-15-43	1-24-44	9050	8998-9040	Frio sd., Olig.	F 45 & 13 miln. ½"	Gas-Dist.	Prob. dome; Geop., Sub.	Structure probably contains large amt. gas and distillate.
Colorado...	Nada.....	Ohio Oil Co.'s McDermott 1, 660 ft fr nw&swl 695-ac lse, sec 792, AB&M sur, 4 mi w Nada.	12-16-43	1-29-44	7087	6510-6520	Cockfield sd., Eoc.	F 98 & 9.8 miln.; ½"	52.2	Fltd. Ant.; Geop., Sub.	May add 250,000 bbls. to reserve.
Jim Wells..	Brownlee.....	**LOWER TEXAS GULF COAST—New Oil Fields** Humble's Brownlee 1, 2175 ft fr wl & 3790 ft fr sl 1014-ac lse, J. Wright sur 19, 1½ mi sw Alfred.	1- 8-44	2- 8-44	5373	4948-4950		F 32; ⅛"	43.0	Ant., Sub., Geop.	May add 50,000 bbls. to reserve.
San Patricio	N. Odem.....	Texas Conservative's Gaines 1-A, 660 ft fr nw&swl blk 22, Welder & Odem subdivn, 160-ac lse, W. G. Burgess sur ,3 mi ne Odem fld.	10-22-43	1-24-44	7225	5430-5436	Frio sd., Olig.	F 91; ¼"	21.8	Fltd. Ant.; Geop., Sub.	May add 200,000 bbls. to reserves.
Jackson....	Harmon.....	**LOWER TEXAS GULF COAST—New Oil Pays** J. A. Gray's McCrory 1, 467 ft fr s&el 40-ac lse, M. L. York sur 22, A-312.	1- 2-44	2- 7-44	5623	5398-5402	Marginulina sd., Olig.	F 96; ¾"	28.4	Nosing, Ter; Sub.	May add 75,000 to 100,000 bbls. to reserves.
Jackson...	N. La Ward..	Amerada's Graves 2, 450 ft fr wl & 1330 ft fr nl blk 11, Pickering Rch subdvn, 120-ac lse, Patrick Scott sur.	11-16-43	2-10-44	8010	5818-5823	Frio sd., Olig.	F 56; ¾"	32.0	Flnk of Ant.; Sub., flnk dr.	May add 100,000 bbls. and up to reserves.
Duval.....	Agua Prieta...	**SOUTHWEST TEXAS—New Oil Pay** Taylor Ref. Co.'s Sepulveda 1-B, 660 ft fr n&wl 199-ac lse, BS&Fsur. 297.	12-31-43	1-24-44	5210	4066-4071	Vicksburgh sd., Olig.	F 120; ⅛"	47.4	Fltd. Ant.; Sub., Geop.	May add 780,000 to 1,000,000 bbls. to reserves.
Park.....	Lillte Buffalo Basin.....	**WYOMING—New Oil Pay** Fred Goodstein's Gov't 1, ne ne nw 13-47n-100w.....	8-15-43	2- 8-44	4965	4785-4965	Tensleep sd., Penn.	P 140; 2½"	31.0	Twin Domes Basin Sur.	Prod. small and water encroachment rapid. Stanolind drld. failure on w dome in Tensleep and lower zones and will drill on e dome 1 mi n Goodstein discov., better showing val. of Tensleep.

[1] Character of producing formations abbreviated thus: li, limetone; sd, sandstone; sh, shale; ch, chalk; ser, serpentine; cgl, conglomerate. Ages of producing formations abbreviated as follows: Mio, Miocene; Olig, Oligocene; Plio, Pliocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Miss, Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.

[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million of cubic feet of gas daily, open flow capacity; size of choke given in inches.

[3] Type structure abbreviated as follows: Ant, Anticline; Dome; Fold, Folded; Fltd, Faulted; Mono, Monocline; Nose; S. D., Salt Dome; Syn, Syncline; Ter, Terrace.

[4] Method of discovery abbreviated as follows: C. D., Core Drilling; Dr, Drilling; Geol, Geology; Geop, Geophysics; Grav. met., Gravity Meter; Seis, Seismograph; Sub, Subsurface; Sur, Surface Geology.

the Pickens field, Yazoo-Madison counties, at 4850 feet. At the end of the past year, Pickens was producing 600 barrels of high-gravity oil per day from 33 wells, of which 7 were flowing. The Eutaw also yields important production in the Tinsley field, Yazoo County, although that field also produces from the Selma chalk and the Tuscaloosa. Further development of the new Heidelberg field will occur immediately.

As interesting as the Mississippi strike, if not as important, was the discovery which put Alabama for the first time among the oil-producing states. Located in Choctaw County, 15 miles southwest of Butler and 15 miles east of the new Eucutta field, Wayne County, Mississippi, the new Alabama oil field was opened through completion of Hunt Oil Company's A. R. Jackson 1, SW NE 2-10n-4w. The well initially flowed 60 barrels of 20-gravity oil daily from Selma chalk at 2800 feet, although it had been drilled to 5380 feet. The chalk was topped at 2560 feet, and casing was set at that depth, and there was good porosity of the chalk at 2575-2585 feet. The Selma is productive also in the Tinsley, Yazoo County, and Cary, Sharkey County, fields of Mississippi.

The Alabama strike appears especially important, from a regional standpoint, when considered along with the recent discovery in Mississippi and the several discoveries of last year in Mississippi and Florida. These pioneering successes doubtless will stimulate exploration over the whole Southeastern States region and ultimately lead to discovery of additional important fields.

Aside from the Alabama and Mississippi strikes, February's exploration yielded no other definitely important oil field discoveries. Probably among the best of the month was that in Barber County, Kansas, by Deep Rock Oil Corporation, Skinner B-1, C W NW SE 29-31s-14w. The well flowed 278 barrels of 36-gravity oil daily from Viola lime at 4624-4640 feet. It is on a big structural feature which covers about one third of a township. The discovery may develop into a major producing area, although additional drilling will be required to determine the productivity of the Viola in that area.

Summary of Results of Exploratory Drilling

ITEM	Jan., 1944	Feb., 1944	January-February 1943	January-February 1944	Percent Diff.
Oil Discoveries	30	38	56	68	+21.4
New Fields	20	22	29	42	+44.8
New Pays	10	16	27	26	− 3.7
Distillate Discoveries	3	2	3	5	+66.7
New Fields	2	2	3	4	+33.3
New Pays	1			1	+
Gas Discoveries	4	5	7	9	+28.6
New Fields	3	5	6	8	+33.3
New Pays	1		1	1	
Total Discoveries	37	45	66	82	+24.2
Extensions to Fields	3	10	15	13	−13.3
Oil Fields	1	9	14	10	−28.6
Distillate Fields	2			2	+
Gas Fields		1	1	1	
***Total Prod. Tests**	40	55	81	95	+17.3
†**Dry Holes**	287	223	414	510	+23.2
(Weekly Av.)	57	56	52	57	+ 9.6
Wildcats	286	223	403	509	+26.3
Outposts	1		11	1	−90.9
†**Total Expl'tory Tests**	327	278	495	605	+22.2
(Weekly Av.)	65	70	62	67	+ 8.1
Percent Productive (Weekly Av.)	12.3	20.0	16.1	15.9	
Percent Dry (Weekly Av.)	87.7	80.0	83.9	85.1	

* Data for calendar month.
† Dry hole completions are from weekly reports and totals represent completions for 5 weeks in Jan., 1944; 4 weeks in Feb., 1944; 8 weeks in Jan.-Feb., 1943; and 9 weeks in Jan.-Feb., 1944.

In Eastern Texas the New Hope field, Franklin County, assumed increased importance through discovery of a third and deeper pay, Travis Peak sand at 8156-8190 feet, 300 feet below the Pittsburg sand. From the new pay, through 272 perforations, the discovery well, Tide Water Associated Oil Company and Seaboard Oil Company's J. P. Campbell 1, flowed 250 barrels 53 gravity oil daily through 9/64-inch choke, gas/oil ratio 1689/1, tubing pressure 1300 pounds. The well, a dual completion, like all others in the field, also gauged 259 barrels of 42-gravity oil, gas/oil ratio 261/1, natural on 9/64-inch choke, casing pressure 700 pounds, from Bacon (Rodessa) perforations at 7260-7278 feet.

California gained 3 oil fields and 2 gas fields in February, but none of the new producing areas is of very great present promise.

Colorado gained a new black-oil field, Clarks Lake in Larimer County, 3 miles southeast of the Wellington field. But its importance is limited in view of the small production of the discovery well and the unimpressive record of the Wellington field, now nearing depletion from the same pay.

Illinois has only several oil field extensions and new pay discoveries to show for its February exploration, and all appear relatively unimportant. One of the four extensions, 2 miles west of Divide pool, may prove to be a separate pool. The new pays of 4 oil fields are unimportant because other wells in those fields penetrated the same zones without reporting oil.

Michigan gained 1 new oil field, the Home pool, Montcalm County, but production of the discovery well rapidly declined, and productive area is expected to be confined to 300 acres or less.

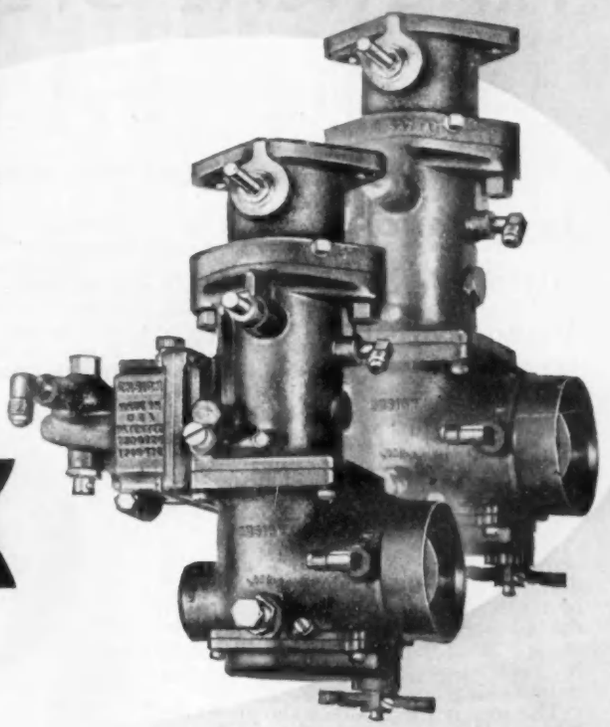
Results of Exploratory Drilling in February and First Two Months

State or Dist.	FEBRUARY, 1944														FIRST TWO MONTHS, 1944																	
	Productive Tests									Unproductive Tests				Total Exploratory Tests	Productive Tests									Total Productive		Unproductive Tests				Total Dry		Total Exploratory Tests	
	New Fields			New Pays			Extensions			Total Productive	Wildcats	New Pays	Outposts	Total Dry		New Fields			New Pays			Extensions			2 Mo. 1944	2 Mo. 1943	Wildcats	New Pays	Outposts	2 Mo. 1944	2 Mo. 1943	2 Mo. 1944	2 Mo. 1943
	Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dist							Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.									
Alabama	1									1					1	1									1						1	
Arizona											1			1	1											1			1		1	
Arkansas							1			1	2			2	3						1				2	2	4			4	7	6	9
California	3	3								6	14			14	20	3	4								7	3	26			26	20	33	23
Colorado	1									1	1			1	2	1									1		2			2	1	3	1
Florida																																
Georgia																														1		1
Illinois	1			5			3			9	18			1	27	2			10			3			15	21	48			48	45	63	66
Indiana							1			1	6			6	7	2						1			3	2	13			13	18	16	20
Iowa																														2		2
Kansas	6									6	32			32	38	8									8	5	70			70	65	78	70
Kentucky				2						2	9			9	11	1			4						5		21			21	5	26	5
Louisiana				2			1			3	12			12	15		1		3			1		1	6	3	20			20	15	26	18
North											7			7	7				1					1	2		12			12	10	14	10
South				2			1			3	5			5	8		1		2			1			4	3	8			8	5	12	8
Michigan	1									1	14			14	15	•3									3	6	32			32	25	35	31
Mississippi	1									1	10			10	11	1									1	1	18			18	7	19	8
Missouri											1			1	1											1	1			1	1	1	1
Montana							1			1	1			1	2							1			1		3			3		4	
Nebraska																											4			4	11	4	11
New Mexico											6			6	6												11			11	11	11	11
Ohio		1								1	5			5	6		3								3		10			10		13	
Oklahoma	2	1					1			4	11			10	14	5	1					1			7	8	28			28	52	35	60
Texas	6		2	6			1		1	16	86			86	102	15	1	3	8	1	1	2		2	33	29	196			197	127	230	156
E.T. Bor.									1	1	2			2	3									1	1		2			2		3	
Rest o E. T.				1						1	11			11	12				1						1		24			24	12	25	12
No. Texas	3			1						4	20			20	24	4			2						6	7	44			44	30	50	37
W. Central	1									1	12			12	13	1									1	5	21			21	12	22	17
W. Texas				1			1			2	11			11	13	3	1		1			1			6	3	27			27	8	33	11
Panhandle											1			1	1												2			2	1	2	1
U. Coast			2							2	9			9	11	1		2							3	3	21			21	9	24	12
L. Coast	2			2						4	9			9	13	6		1	3	1	1			1	13	8	29		1	30	20	43	28
Southwest				1						1	7			7	8				1			1			2	3	19			19	24	21	27
S. Central											4			4	4												7			7	11	7	11
Wyoming				1						1					1				1						1		1			1	2	2	2
Total U. S.	22	5	2	16			9		1	55	223			223	278	42	10	4	26	1	1	10		3	97	81	509		1	510	414	607	495

Extra **POWER** FOR HOISTING

Unvarying **POWER** *for* ROTARY & PUMPS

FACTS about your Climax engine



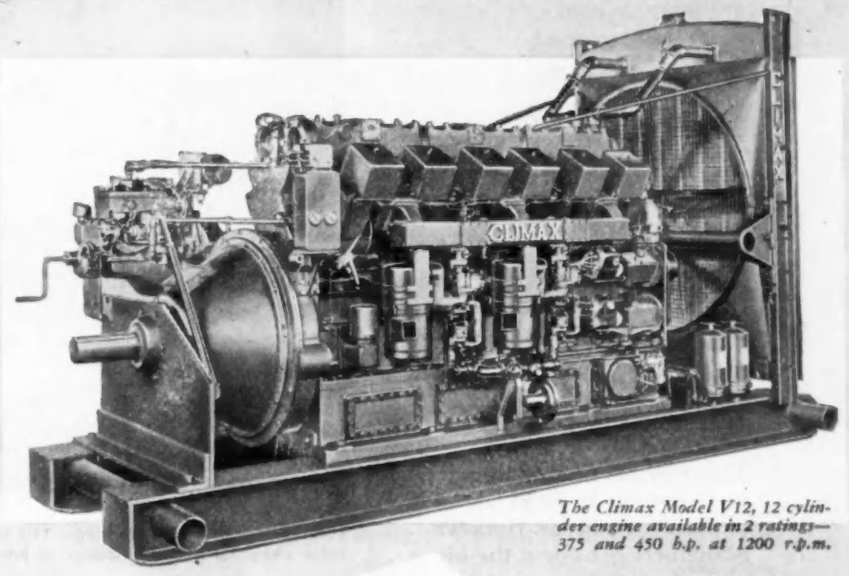
Climax

Blue Streak DUAL CARBURETION

The two carburetors on your Climax engine provide an extra reserve of ready power for pick-up loads, and an ample reserve supply for continuous service.

While the load characteristics of rotary drilling rigs vary widely, two load types are most often encountered. The hoisting load—handling heavy pipe strings—is intermittent, and demands a great power reserve. The drilling load—driving rotary machine and slush pump—is usually continuous and calls for an unvarying, dependable power output.

Both these loads are handled easily by Climax engines. The dual carburetors get the full amount of power from each cylinder by providing equal fuel distribution, and uniform mixtures to each. In addition the optimum spark timing is obtained for the particular fuel used.



The Climax Model V12, 12 cylinder engine available in 2 ratings—375 and 450 h.p. at 1200 r.p.m.

In addition you may have these other engine operating advantages: QUICK GAS ENGINE STARTING • BLUE STREAK COMBUSTION • DUAL SPARK PLUGS • DUAL MAGNETOS • TRIPLE FUEL EQUIPMENT • POWER TAKE-OFF AND SUPPORT • STEEL SKID MOUNTING

TAKE CARE ...of your present Climax Engines

1. Keep engine lubricants clean, and maintain oil at proper level. Change oil after each 100 hours of operation.
2. Keep cooling system free of scale, to prevent warpage of cylinder blocks and damage to heads. Clean and flush cooling system with scale remover every three months.
3. Maintain tappet clearances at those shown on engine name-plate. Check every two weeks with thickness gauge.
4. Keep fuel clean.
5. Keep outside surface of engine clean and dry to prevent ignition harness failures.

Climax Engineering Company

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PRACTICAL OPERATING *Hints* FOR THE PIPELINER

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston*

1. OPERATION

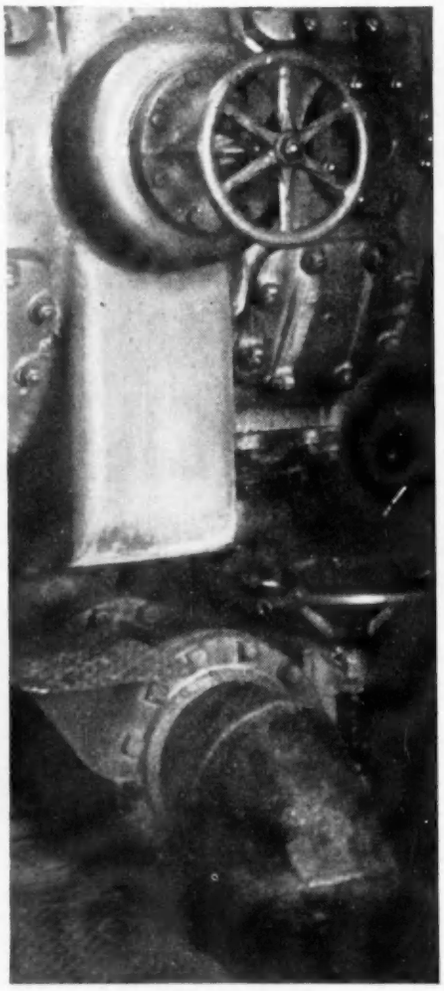
Auxiliary Step Aids Valve Manipulation

TO ASSIST the operators on large compressors and pumping units to reach control valves and check elevated gauges and other indicating equipment, one station adds ingenious steps to the units by taking advantage of a bolted flange directly below the controls.

By welding a weld or flange to the center of a square of non-skid steel flooring, and drilling the projecting edge of the web to match the bolt circle of the pipe flange, the support may be slipped over the bolts and held firmly in place when the flange bolts are retightened.

The step in the instance shown comes flush with the top of the flange, though the web may be carried to any desired height, simply by tacking stiffeners of angle iron or light channel to the relatively thin steel of the web and by adding braces or fillets to the junction between step and web to insure against flexing or bending at this point when eccentrically loaded.

On one check between closing a valve with and without the use of the step, it was found that the step reduced the closing time by 18 percent—margin sufficient to spell the difference between disaster and safety in an emergency.



Formed to bolt circle of flange, this step spots valve wheel for best application of hand power.

of Pipe Laying Gangs with **BUCKEYES!**

This pioneer line of trenchers has kept a jump ahead of pipeliner's needs. Buckeye Mainliners get down the big pipes faster; keep ahead of layers and welders. They've got the stamina for toughest going in any country. Models 32 and 48 for main lines; Models 11 and 12 for small gas, gasoline and gathering lines.

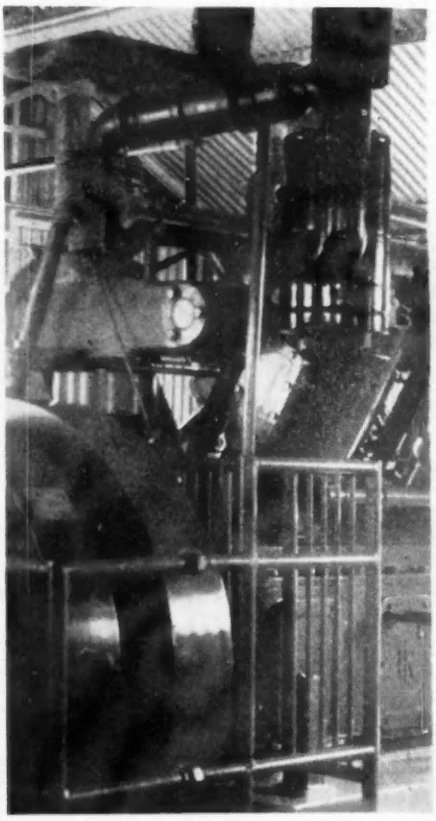
BUCKEYE TRACTION DITCHER COMPANY
Findlay, Ohio
Built by Buckeye
TRENCHERS, SHOVELS, CRANES
BACKFILLERS, TRACTOR EQUIPMENT.

2. AIR FILTERS

Pipe Support Guards Tie-in Connections

WHEN an air filter is installed on an engine inside the building some sort of support should be provided to remove the weight of the fittings from the mixing valve. This can be done easily by extending one of the larger posts of the safety rail to a point almost touching the connections carrying the filter.

A double saddle clamp is attached to the upper end of this post which can be clamped around a swage, nipple or the pipe between the filter and the mixer valve. The split clamp is employed so that access may be had to any part of the equipment when maintenance is required.



Taking weight of cleaner from pipe fittings, post permits sway in cadence with engine vibration.

3. THERMOMETERS

Rack Protects Units Between Use Periods

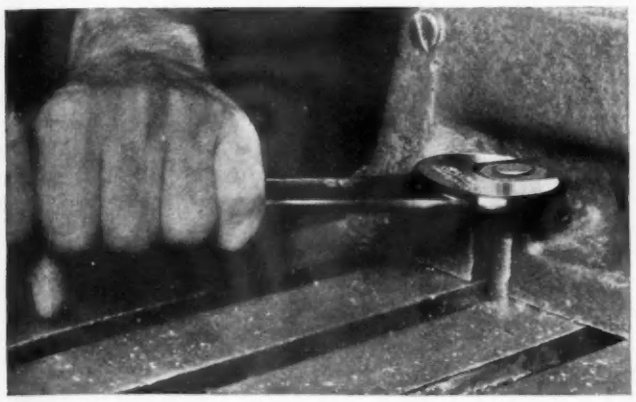
MORE thermometers are broken during the time they are not in actual use than when engaged in obtaining temperatures of oil samples. To reduce this "stand-by time" breakage cuts operating expense, and speeds sampling if the units can be stored where readily available.

A rack, suspended from the laboratory ceiling or that portion of the pipeline station set aside for shake-outs and sampling, provides convenient storage, and utilizes space otherwise unused. The rack consists of a wooden frame, into which has been inserted a number of cardboard tubes, each long enough to cover the shaft of a thermometer. On the ceiling above each

THE HOW AND WHY OF WILLIAMS DROP-FORGED TOOLS

THE PROPER USE OF OPEN-END WRENCHES . . . Data Sheet No. 22

First, select a wrench with the correct size opening for the nut or bolt to be accommodated. Test this by the amount of free back and forth movement of the wrench on a stationary nut. Too large an opening may slip under a hard pull and injure you, the nut, or the wrench.

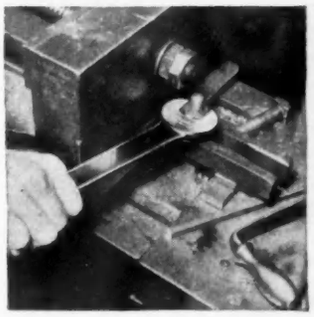


Any wrench will perform best and with highest strength when squarely and fully seated on the nut or bolt head as shown above. Pull straight, avoiding side strain or "cramping" of the wrench. Nine times out of ten you will find it safer to *pull* rather than *push* on a wrench. Greasy hands... or greasy wrenches... are dangerous. A dry, clean grip always permits the hardest, safest pull and helps to reduce accidents.

Never use a wrench with a badly worn or chewed and spread opening as pictured above—particularly on hex nuts. Williams' Wrenches are stamped with the nominal size of their openings; that is, the size of the nut or bolt head across the hex or square flats. Openings are made .005" to .040" (proportionate to size) larger than the nut or bolt head they are intended to fit. It is, therefore, easy to detect spread openings.

Standard commercial wrench leverages are such that an average man can readily break bolts or strip threads up to 5/8" bolt diameter. Consequently care should be exercised and a sense of "feel" developed. Bolts larger than 5/8" seldom can be set up too tight with average wrench leverages. If you must use auxiliary leverage on large bolt sizes, such as a pipe extension over the handle, make sure the two are strongly and well coupled. The best and safest procedure is to purchase special wrenches with extra long handles.

Never hammer an ordinary wrench handle as a substitute for increased leverage. *Striking-face* wrenches, (see above illustration) made specially for this purpose, should be used. A vast amount of energy is stored in several sharp hammer blows, and ordinary wrenches are not designed to withstand this abuse.



When the usual open-end wrench is operated in close quarters on hard-to-get-at nuts, it should be remembered that "flopping" the wrench upside down between swings gives an angular advantage which permits continuously rotating the nut, or bolt in the least possible space. By this "flopping" trick, illustrated above, the usual 15° angle wrench will operate a hexagon continuously where the swing is limited to 30°; otherwise 60° would be necessary.

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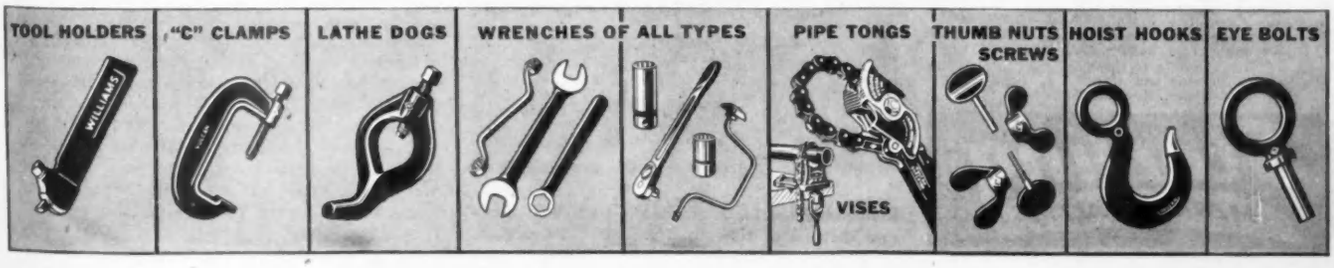

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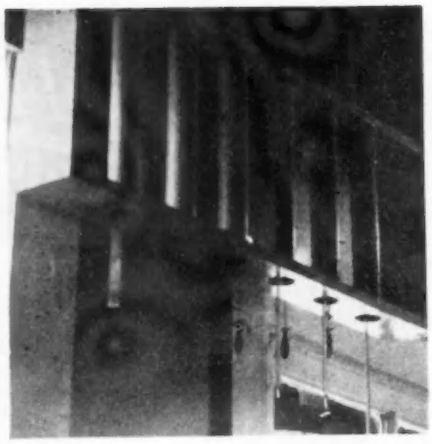

Weights and pulleys retract units into cardboard tubes when not required for sample checking.

tube is set a screw eye, carrying a small pulley. Through these pulleys run light fishing lines, each terminating in a hook of the proper size to thread into the eye at the upper end of the thermometer. The other end of the line carries a small weight, of sufficient size to slightly balance the thermometer.

To use, a thermometer is pulled from its tube, and the supporting hook caught at the edge of the tube to retain it where it will be available for replacing the unit after using. When replacing the thermometer, it is necessary only to hook it onto the line, release it gently, and permit the weight to pull the unit within the tube. A knot or other convenient stop engages the guard of the pulley when the line has raised the thermometer to the desired height.

4. FIRE WALLS

Drainage Diversion Prevents Undercuts

TO PREVENT erosion of the fire wall below the point where the drain from the inner level emerges, as well as to carry any possible sludge or oil beyond the belt of grass used to give stability to the earth fill, one company utilizes scrap corrugated metal, forming a trough which fits under the exposed end of the drain, and which is held at its lower end by a pair of pipe stakes driven deeply into the ground.

By using an arched sheet for the lower section of the drain, the flow is spread out over a wide surface, and permitted to reach the drainage ditch in a wide sheet instead of a high-velocity stream, and the erosion at this point thus easily controlled.

The temporary drain between outlet pipe and trench may readily be removed to permit machine mowing of the cover crop, and the creation of possible fire hazard thus eliminated.

Removable shield carries fluid from wall drain and distributes flow to drainage ditch system.

5. ENCLOSURES

Spring-loaded Latch Speeds Trucking

Set to depress under gate base, this dog latches with spring, being easily disengaged by foot.

IN THESE days of manpower shortages, the service truck frequently carries no helper, and the entry into the storage yard now requires blocking the self-closing gate by the driver before he can obtain the materials required. Where no blocking is handy, the gate may be wired to the fence, or even, in an emergency, left to drag along the side of the truck as it enters the yard.

To provide a simple and easily released latch, one company mounted a stub post near the end of the gate swing, pinning a spring-controlled dog to the post so it would operate freely. The outer end of the latch is tapered so that the lower member of the gate, when swung open, depresses the latch body until the gate has passed the notch, at which point the spring operates to pull the dog upward, retaining the gate firmly.

To close the gate, it is necessary only to step on the projecting latch, allowing the gate to begin its swing, after which the latch rises to the former position, ready again to engage the gate as it swings open.

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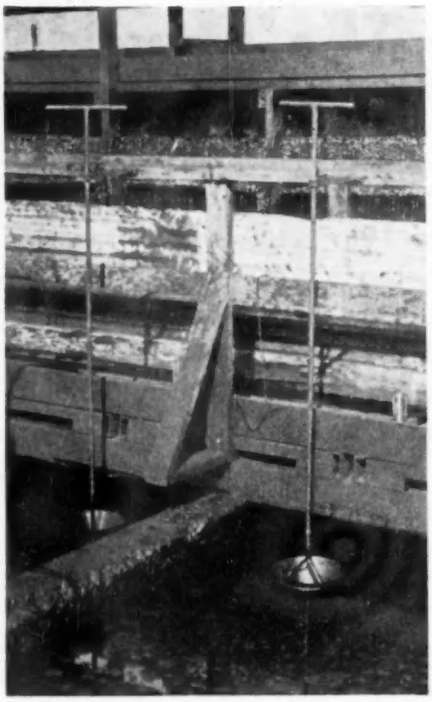
PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, Houston

1. OIL RECOVERY

Adjustable Skimmer Traps Floating Oil



Threaded collar and extension handles permit accurate setting of funnel for close skimming.

ELIMINATING much work connected with the recovering of oil from the surface of skimming ponds, a positive acting, easily manipulated shop-made device is being used by one producing company with considerable success. From a centralized, main oil gathering system smaller branch lines are taken off, each being brought up to a corner of one of the numerous sections into which the skimming pond is divided. A nipple is brought up vertically at this point, its upper end coming to within eight or 10 inches of the expected mean fluid level of the pond. The pipe is also carefully threaded for a length of several inches down from the top of the pipe nipple.

To the vertex of an inverted light sheet metal cone is welded a pipe collar of the same size as the upright pipe. This cone may be screwed down as far as it is necessary to allow the film of oil to start overflowing into the funnel-shaped opening. To allow manipulation from walkways several feet above the pond level, a light pipe handle fitted with a cross-bar on the top is attached to the cone. The pipe, split into three equal sections at the bottom, is then spread apart and welded to the inside of the cones.

One advantage of this type of skimming device lies in the fineness to which the leveling adjustment may be made, a complete turn of the handle amounting to less than ⅛-inch change in the overflow level. Oil films of any thickness, therefore, are easily skimmed and with but a minimum of water finding its way into the recovery system with the oil. Since fluid is collected in a gravity drainage system, it is practically automatic and fool-proof in its operation, an inspection once or perhaps twice a day sufficing for any minor adjustments that may be necessary on the overflow cones.

2. TRANSPORTATION

Demountable Rack Accommodates Mast

PARTIALLY offsetting the advantages gained by use of unitized pulling units on wells not equipped with derricks is the chore of having to move the heavy mast from well to well. Unless it is of the collapsible type, it is often too long and awkward to carry on an ordinary lease truck, making it necessary to devise a special trailer unit to facilitate moving it about the lease.

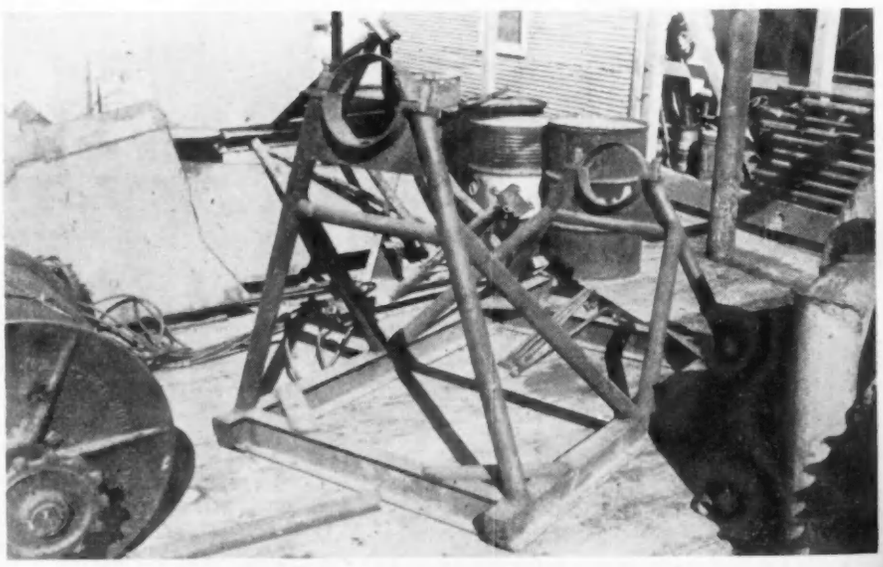
Instead of building special hauling equipment for this purpose, a simple carrying rack may be made with scrap materials and a few hours work by the company welder. Mounted on a steel skid base, the sloping framework is constructed of short lengths of 3-inch pipe welded to form a support or cradle for two large collars into which the mast may be lowered and firmly clamped. In operation, the rack is skidded onto the bed of the truck and securely fastened into position by four long threaded bolts which run through holes in each corner of the base, extending through the truck bed to the frame.

The lower, or supporting, half of the collars is reinforced with a web of tank steel, welded to the uprights and tacked firmly to the collar, while interior braces of heavy pipe, running from high on the supports to the mid-point of the base members, afford the required rigidity without projecting beyond the base area of the unit. Sufficient rake is given the upright members to insure ample resistance to overturning when the unit takes a sharp turn while loaded with the overhanging weight of the servicing mast.

When moving a mast, the truck is backed up to it and the pole is then let down slowly into the open cradle supports. The truck's winch then is employed to hoist it off the ground several feet, after which the cradle clamps are bolted down tightly.

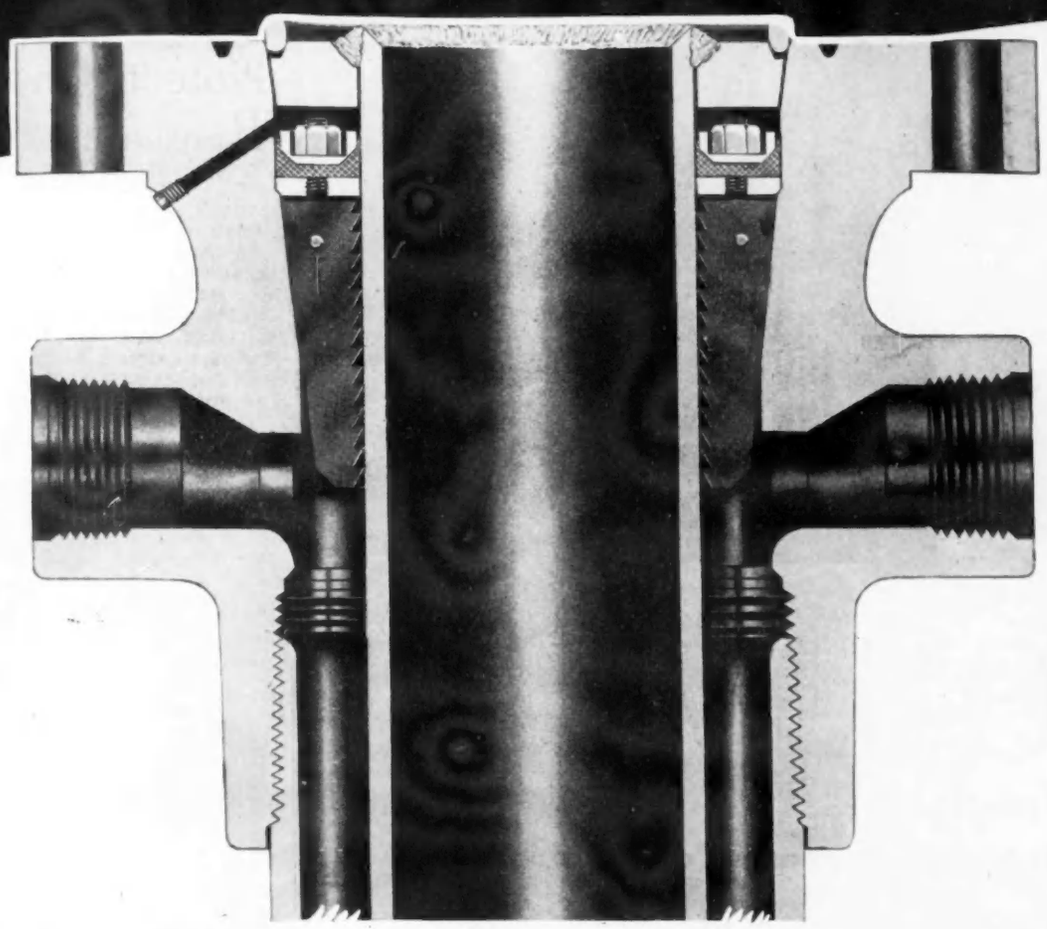
The principal advantage of this type of support lies in the fact that the mast is carried in a position midway between the vertical and the horizontal, and is therefore more easily maneuvered around the lease roads, under power lines, guy wires, etc. In addition, appreciable time is saved by being able simply to back up to the pole and lay it back only a short distance to its final position in one operation without the necessity of ever having to lay it on the ground. When not in use, the rack is skidded onto the pipe rack, thus freeing the truck for other lease work.

In building racks of this type it is necessary to design them for the lease on which they will be used. Maximum



Welded up from scrap materials, this rack may be bolted to available truck bed, and serves to carry mast at required angle for road clearance and ease of installation on the next job.

6000# OR 10,000# TREE



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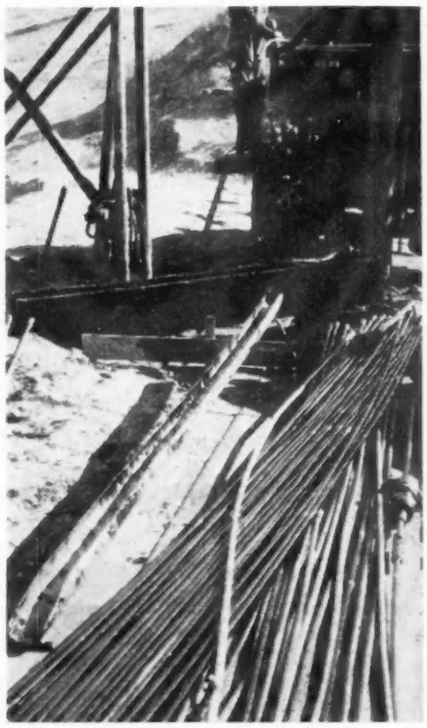
road clearances, sharp bends in the roads and similar hazards should be checked before deciding upon the final angle at which to set the two supporting collars, as this angle determines the height which the pole will reach while mounted on the truck.

3. SUCKER RODS

Trough for Rerunning Protects Pin Threads

RERUNNING sucker rods in the hole is a phase of work that can easily run into considerable trouble when strings are pulled in singles and laid down on the ground. If the far end of the rod is not carried or carefully handled when the elevators pick up at the well end, the fitting is likely to be fouled with sand and dust, causing loss of man-hours in cleaning fittings or perhaps causing injury to the rod should the fitting subsequently not be made up properly.

To protect the rods from such hazards, yet not require additional men on



Split and flared pipe section serves to guide pin end as rod is tailed in to servicing unit.

the job, one company uses a 20-foot guide made of a length of 3-inch tubing split open and tapered at the ends. The trough-like guide is tilted upward, the well end being supported on a pair of sucker-rod legs some two feet above ground level. The far end rests on a low welded base two inches above the ground, improving stability and preventing the guide from rolling over sideways.

Not only are sucker rods kept off the ground by this method of handling, but less work is required of the man who "tails in," permitting him to lay his end in the guide and prepare the next rod while the first one is being lifted.

of "Underground"

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Letters to the Editor

Well Spacing

DEAR SIR:

I wish to especially compliment THE OIL WEEKLY for its vision and courage in publishing the splendid articles by Messrs. Stuart K. Clark, C. W. Tomlinson and G. S. Royds, respecting the article on "Well Spacing—Its Effects on Recoveries and Profits." These men should be especially decorated by the hard-working oil producer for the presentation of their facts to refute the stupid over-all spacing plans of the many bureaucracies that have been born during the distress of the oil business, whose leaders have not had the courage to stand out for the rights of the oil business in making it possible to be paid for the recovery of a barrel of oil the amount of its lifting cost and normal overhead. I am sure that my friends feel that if THE OIL WEEKLY will get some of the technicians in the industry to have the courage of their conviction and place before the public at large, and Congress especially, the irrefutable fact that the spacing regulations imposed upon the operator today are not only putting him in the poorhouse, but are doing the greatest thing to deplete the known reserves, this will be a special service. Dorsey Hager championed the idea long ago to bring this issue to the attention of the oil industry, but not forcefully enough to give the producers the courage to demand and require from the bureaucracies the control and operation of their wells and the spacing, after they had spent untold fortunes to discover their reserves and are better equipped technically and every other way to decide by facts the relationship between well spacing and the recovery.

NELSON L. COOMBS.

Armstrong Oil Company,
Chicago, Ill.

Advocates Closer Spacing

DEAR SIR:

The matter of well spacing is an extremely timely topic right now. Here again, as with prices, we have some rules made by the government laymen that apply to all fields and all areas regardless of sand conditions and of the structural pictures. I congratulate you on publishing the AAPG article by Clark, Tomlinson and Royds (February 21 and 28 issues) on this subject. I understand it has created much discussion both pro and con. After all, that is what we want. I have become darned sick and tired of the propaganda put out by various agencies, and even by oil companies, for the sole purpose of trying to prove some pet ideas, or for feathering the nest of those who are behind such propaganda. I am wondering why we cannot get back to the days when scientists used to debate, not to try to prove some pet notion they had, but rather to try to arrive at the correct conclusions.

The subject of well spacing is one that had been a pet hobby of mine for over a quarter of a century. I have gone back to the days of the old-time producer, studied over development maps, gone over the oil fields on the ground in Ohio, Indiana, Illinois, and Northeastern Oklahoma. Then around Electra and Burkburnett. And one cannot help admiring their judgment in spacing. They had to get their profits back out of production, so it is a cinch they did not drill any more wells than they thought necessary. At the same time they got the most out of the fewest acres. Nobody has successfully refuted the premise that the more wells that are drilled the more oil will be recovered. There is an economic limit—depending on the particular field—beyond which the net returns will be diminishing. But why any government agency should object to a man spending his own money to get oil that is very much needed right now, even though that man might not profit by so doing, has always has been a mystery to me. This wide-spacing fad was very popular among government agencies during the middle of the depression, at a time when every effort was being made to provide work for the unemployed and to use materials which would in turn mean further employment for their fabrication.

The paper by Clark, Tomlinson and Royds is mighty fine, but it does not go far enough. In core analyses and the electric log we have two agencies that should make the matter of well spacing something approaching perfection. We should be able to space wells much more scientifically than did the old-time producer. But we are now doing a job that he would have just cause to laugh about.

In my opinion the most important factor in the matter of well spacing is the permeability of the producing sand. When you stop to think about it such a statement is just good common horsesense. The one extreme of maximum permeability is the illustration that has been so often used of having Carlsbad cavern filled with oil and sucking that oil out with one straw. The minimum extreme would be that of having an oil shale as your pay. Our oil fields are from pays that range from one of these extremes to another.

The next most important factor is the bottom-hole pressure of the reservoir. Then would come the thickness of the pay, and last, the porosity of the pay. I can illustrate my reasons for the order in which I place those factors as follows:

1. *Permeability*—About the lowest average permeability of an oil sand that can reasonably be expected to produce in any decent amount regardless of bottom-hole pressure is 50 millidarcys. There are some producing wells that do not have any more permeability in the pay. On the other hand there are Gulf Coast pays that have a range up to 15,000 millidarcys, or 300 times that of the producers with low permeability.

2. *Bottom-Hole Pressure*—The original bottom-hole pressures in a sand at 400 feet should be normally 160 pounds. On a 10,000-foot sand they should be 4000 pounds, or 80 times as much.

3. *Thickness of sand*—Perhaps an average thin sand would be about 10 feet in thickness. A 100-foot sand is considered plenty to brag about, but a well with 400 feet of sand would have 40 times the sand thickness of the 10-foot pay in the minimum well. A sub factor to be considered under this heading is that the gas in the thick pay does not do the work that the

"Congress Did It!"

The administration, in its next fireside chat, will place squarely on the shoulders of the United States Congress all blame for inflation, labor shortage and other war-time ills. And the stigma may stick, if we fail to keep our wits about us, for the plans have been well laid. In the course of the last fireside chat, remember, Congress was ominously asked to do things no one expected it to do, least of all the administration. We have a hunch, however, the loophole thus designed for escape from administration bungling may prove to be a political noose." Let's hope," to quote the late Irvin Cobb, "that it's nothing trivial."

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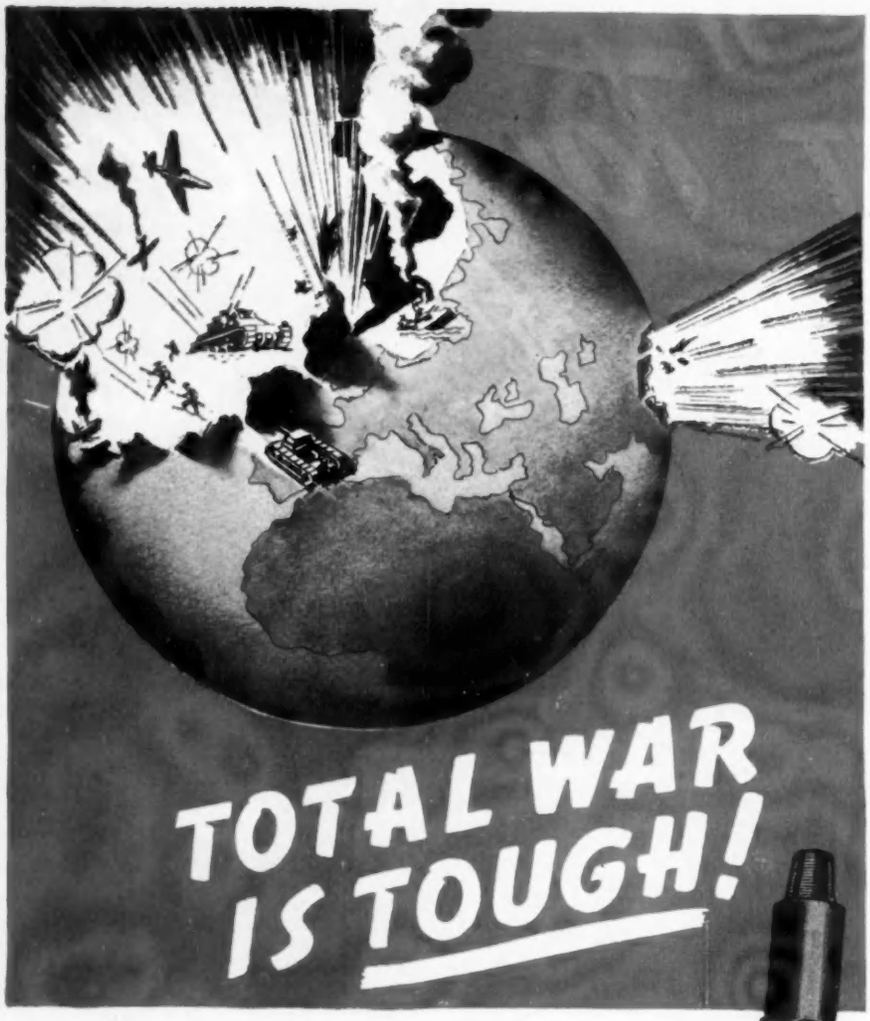

Tough indeed! But war is also a proving-ground for men and machines. In such emergency, men learn the best way of doing things. Spang Cable Tools — plenty good now — will be better still after victory. Scarce now — they'll be plentiful when wartime obligations are fulfilled.

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gas in the thin pay does, so that more oil is left in the thick pay in proportion to its original oil content than in the thin pay.

4. *Porosity*—My experience has been that there is very little variation in the porosities of sand pays. The maximum porosity possible with perfect spheres all the same size and no cementing material is a little over 40 percent. Almost any sand pay will have a porosity of 15 percent, while an extremely high porosity is one of 30 percent, which is just twice the minimum porosities. I find porosities in the average sandstone reservoir usually average 20 percent.

Most of us who have had experience in estimating reserves, and have had to make some early estimates in new fields have obtained the best and most accurate results by taking the history of the same sands found at about the same depth in older fields in the same general area. And in doing this we have arrived at some ideas of what would have been the best spacing in those old fields, for various shaped and sized leases had different spacing patterns. By using the history of the fault-line Woodbine-sand fields it was easy to estimate what the ultimate per-well recovery in the same sand in the East Texas field would be. This is an example that is familiar to all of us. However, in these days of far-flung discoveries remote from other pools, of the discovery of production in sands that are much deeper than are the same sands in pools with some productive history behind them, more information is necessary both for wise spacing and for computing recoverable reserves.

When the old-time practical producer learned that a new field had no effective water drive he knew that the permeability of his pay sand was low, even though he probably did not know what permeability was. He had the good sense to space his other wells closer than he would under an effective water drive. Nowadays we can use the same good sense by comparing the core analyses of those wells in any field which have been cored with the self-potential of the electric logs of those key wells and using this as a basis for determination of permeabilities on the electric logs of the wells from which we have no cores. So there is really no excuse for not being able to work up a fair estimate of permeabilities in any of the newer sand fields in the country.

In reviewing the literature of papers on fields in bulletins of the American Association of Pertoleum Geologists I am impressed with the scarcity of references to permeability. However, in an attempt to find the illustration of what would constitute a maximum effective well spacing under the most favorable conditions, I find that a paper by John C. Miller in Volume 26, beginning on page 1441, of the bulletin of the American Association of Petroleum Geologists, entitled "Well Spacing and Production Interference in West Columbia Field, Brazoria County, Texas," concerns a field that must be near the top as to all factors being most favorable. Permeabilities range from 200 to 15,000 millidarcys, bottom-hole pressure originally was 1330 pounds, sand thickness averaged 100 feet, and porosities averaged 28 percent. He proves rather conclusively that a spacing of one well to about 20 acres would have been most economic. Contrast that with some of the larger fields of Southern Oklahoma where the porosities average 20 percent, the sand thickness probably 100 feet, the bottom-hole pressures from 350 to 1000 pounds, but with

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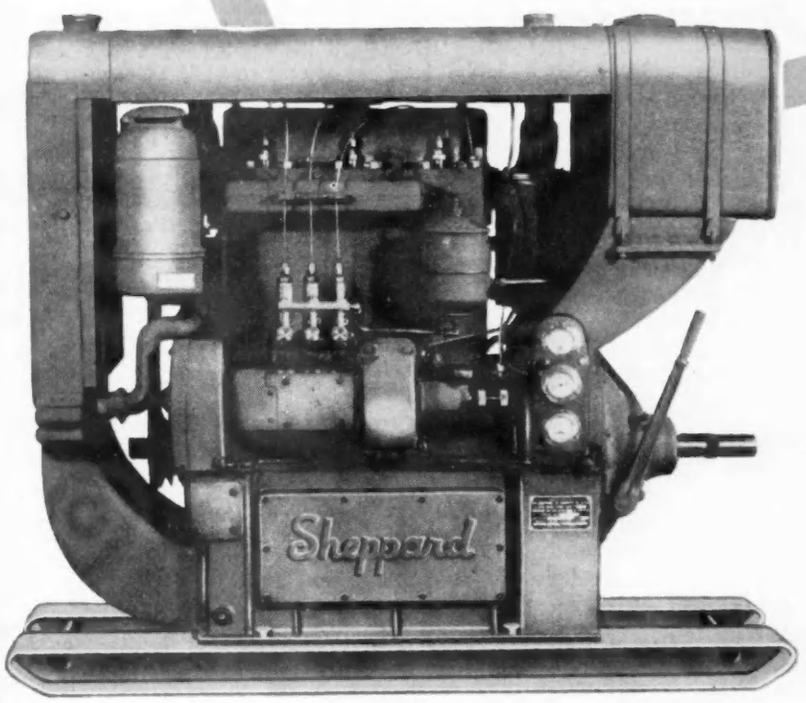

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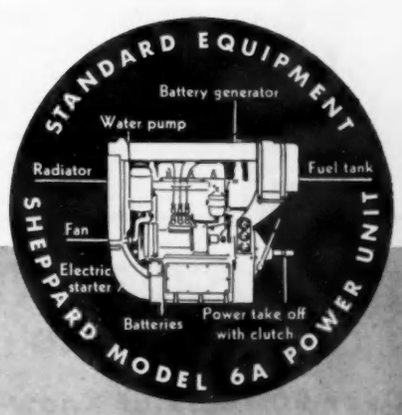

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Over 90 Years of Know-How in Fine Steelmaking

permeabilities that average possibly 400 millidarcys and you can see why it is economic to drill 9 wells to a 40-acre tract in the case of the higher bottom-hole pressures, and as many as 5 wells to each 10 acres in the case of the lower bottom-hole pressures. Naturally those wells with the lower bottom-hole pressures are shallow wells.

There are Southern Oklahoma fields now being drilled to sands found at from 5000 to 6000 feet with permeabilities that do not exceed 200 millidarcys. Federal orders allow only one well to each 40 acres. Who is going to be foolish enough to drill the inside locations if, as and when the restrictions are ever removed and when the bottom-hole pressures are away down? And who is going to take the responsibility for the waste of oil that can never be recovered?

FRANK GOUIN.

Geologist,
Duncan, Okla.

Go Ahead and Wildcat

DEAR SIR:

I read with much interest the article by Don Carroll on page 54, February 28, 1944, issue.

I agree with Wallace E. Pratt that unexplored sedimentary basins of the United States "hold accumulations of oil within moderate drilling depth that will be found to be at least equal in volume to all the oil we have so far discovered in this country."

Have been in the geological and wildcat drilling game since 1915 over a large portion of the United States. During the 1920's so much oil was found in the Mid-Continent that wildcatting was discouraged.

What is needed now is a better price for crude and encouragement to go ahead and wildcat. The same thing can be done again as was done in the 20's.

A. H. TINSLEY.

Marysville, Calif.

Gasoline Pipe Line Study Shows 1935-40 Trends

Gasoline pipe-line companies, during the period 1935-40, had rates of return ranging from a low of 15.57 percent for one company to 98.61 percent for another, and eight companies operating such lines had average profits which steadily increased from 28.16 percent in 1935 to 38.90 percent in 1940, the Federal Trade Commission reported March 2 in a survey of distribution methods and costs of petroleum products.

The study, undertaken for the benefit of Congress, was devoted to the situation as it existed prior to the war, and no effort was made to survey current costs. The commission, however, did comment that "the unfavorable impact of the war economy is bearing heavily particularly upon the smaller independent wholesale and retail dealers in the petroleum trade, and many of them are threatened with early bankruptcy."

"The longer the war lasts the greater will be the degree of concentration in the marketing of petroleum products. Under these conditions supplier-dealer arrangements and relationships tending to monopolistic control by large marketers should be critically examined to the end that the interests of independent small dealers shall be conserved to the maximum degree during the wartime emergency and thereafter."

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

THERE were few definite developments in the Washington oil situation last week, but the way was cleared for the thorough investigation of Petroleum Reserves Corporation, the Saudi Arabian pipe line and the world oil situation sought by Senators Brewster and Moore.

In the field of foreign affairs a preliminary report by E. DeGolyer on the Middle East fields was made public and PRC President Ickes and Senator Moore rehashed all that has been previously claimed and charged regarding the pipe line in a radio forum.

In domestic matters, the Office of Price Administration announced crude oil price ceiling increases for three small fields and disclosed that it had perfected a plan for subsidizing stripper well production, to be submitted to Stabilization Director Vinson.

OPA also made the long-anticipated cut in the value of A gasoline coupons outside District 1 and whittled down B coupon allowances on the West Coast.

Stripper Subsidy Would Cover Half of Producing Wells

Middle East Reserves Compare With Total for U. S.

Petroleum Policy Committee of the Senate Announced

By B. F. LINZ,
Washington Correspondent

☆ ☆ ☆ ☆

Mission Says Middle East to Be World Oil Production Center After the War

Foreseeing that the Middle East will be the center of world oil production after the war, E. DeGolyer, head of the mission which recently studied conditions in that area, reported to Petroleum Reserves Corporation last week that it will supply world requirements for many years to come and that "for the next 10 to 15 years at least the Middle East area is likely to develop and maintain productive capacity of as much as four times its probable market outlet."

On the basis of studies made by the mission, which consisted of DeGolyer, W. E. Wrather, John Murrell and C. S. Snodgrass, the report placed the present production in Iran at approximately 325,000 barrels daily, with 50,000 barrels of residue being returned to the ground; Iraq is currently producing 90,000 barrels daily and Saudi Arabia and Bahrein 35,000 barrels.

Three refineries in the area, with a current capacity of some 373,500 barrels daily, will be expanded by the end of this year to 500,000 barrels daily, or about 11 percent of the United States refining capacity. However, it was pointed out, of this 500,000 barrels only 58,000 barrels is American, and that owned through a Canadian corporation.

"In discussing the reserves of this area it is extremely difficult to find a common denominator by which to express them," DeGolyer stated. "Our preliminary estimate of reserves actually proved is approximately 5 to 6 billion barrels in Iran, 4 billion barrels each in Iraq and Kuwait, 2 billion barrels in Saudi Arabia and Bahrein, and less than ½ billion barrels in Qatar. If one considers reserves as proved by developed fields and indicated by fields discovered but not yet fully explored, the proved and indicated reserves in Kuwait appear to be approximately 9 billion barrels, those in Iran 6 to 7 billion barrels, Iraq 5 billion barrels, Saudi Arabia 4 to 5 billion barrels and Qatar 1 billion barrels.

"Obviously, any attempt to appraise the prospective areas of this region must be highly speculative. In our opinion, in any attempted rating of undrilled prospect values, Iran and Saudi Arabia must vie for first place. Iraq ranks a close third with Qatar a somewhat distant fourth, and Kuwait a definitely distant fifth. Too little is known of the values of other areas to justify an attempt to rate them."

Heavy British Holdings

DeGolyer pointed out that all the important fields and practically all the important prospective territories of the Middle East are held by four companies or groups of companies, one of the four groups being wholly owned, another half owned and a third a quarter owned by Anglo-Iranian Oil Company, a majority of whose ordinary shares are owned by the British government.

"When one considers the great oil discoveries which have resulted from the meager exploration thus far accomplished in the Middle East, the substantial number of known prospects not yet drilled, and the great areas still practically unexplored, the conclusion is inescapable that reserves of great magnitude remain to be discovered," the report declared. "The proved and indicated reserves of this area are comparable with those of the United States, yet all of the Middle East reserves have been discovered by the drilling of less than a total of 150 wildcat wells. In the United States we drill more than twenty times this number of wildcat wells each year.

"It is the opinion of this mission that, given reasonable time and a very moderate amount of oil-field material, any single one of these four groups can develop and maintain within its own properties sufficient production to supply world requirements from the Middle East area for many years to come. For the next 10 to 15 years at least the Middle East area is likely to develop and maintain productive capacity of as much as four times its probable market outlet."

At a press conference March 16 PRC President Ickes rebutted charges that State Department officials were not in agreement with the aims and aspirations of the corporation, declaring that "every action taken by PRC has been unanimous" and that the department was represented at every meeting of the board.

Ickes said that work is going ahead on the final contract, but that he is waiting for the British to name their conferees on the Saudi Arabian pipe line and that no discussion has taken place as to whether the companies themselves shall build it.

Charges Standard Opposition

In official circles it was said the opposition to the project is spearheaded by Standard Oil Company (New Jersey) and Socony-Vacuum Oil Company and is based on "business rivalry." Those companies, it was pointed out, are partners in Iraq through Iraq Petroleum Company, Ltd.

Latest development in PRC was the resignation of E. Holley Poe as executive vice president and general manager to return to private business. Ickes disclosed that he has a successor in mind but refused to name him, and there was considerable speculation as to whether an oil man can be found to take the job in view of industry opposition to PRC. Suggested possibilities were E. DeGolyer and Abe Fortas, Undersecretary of the Interior.

Increased Demand Causes Cut for A Motorists

Basic A gasoline rations throughout the country outside of District 1, and B rations in the five Pacific Coast states will be cut on March 22, under an order issued by the Office of Price Administration March 14.

The value of A coupons will be cut from three to two gallons a week, bringit on a par with the value in the East Coast states. On the Pacific Coast, the ceiling for B book driving is cut from 460 to 400 miles a month.

The cut in A rations will be accomplished, as in the East, by stretching the period each coupon must cover.

Basic of the order, announced by Administrator Chester Bowles, is the increased farm demand shortly to develop and a determination not to have

farm machinery idle for lack of fuel, as happened in the East last May.

Bowles said also, however, that too much gasoline is being consumed illegally to permit continuance of former rations in the face of increased agricultural and military demand.

The cut in rations was made in the face of an increase of 140,000 barrels daily in the allocation of gasoline for civilian consumption, placed by PAW March 15 at 1,257,000 barrels daily for the second quarter.

However, it was explained, the increase is necessary to take care of farming operations now starting and the total allocation still is about 500,000 barrels daily less than the normal peacetime requirement.

PAW set the allocation for District 1 at 387,000 barrels daily, an increase of 15,000 barrels over the current quarter, while District 2 was given 536,000 barrels, an increase of 103,000 barrels; District 3, 152,000 barrels, an increase of 6000; District 4, 38,000 barrels, an increase of 6000 barrels, and District 5, 144,000 barrels, an increase of 10,000 barrels.

As the allocations were published, PAW made it clear that it had no responsibility for rationing. A formal statement by Deputy Administrator Davies pointing out that "the responsibility of PAW is for petroleum supply. PAW does not set the value of ration coupons, that is the function of the Office of Price Administration.

"PAW is on record as saying that it believes that petroleum products should be equally distributed throughout the nation, with proper allowance for geographic differences in requirements," Davies said. "How this equitable distribution shall be achieved is a problem for the Office of Defense Transportation and the rationing agency, i.e., OPA. PAW is doing all that is physically possible to produce a maximum of supply."

Wildcat and Secondary-Recovery Aid May Follow Subsidies for Strippers

The first definite step by the Office of Price Administration to meet the demands of the oil industry for price relief was taken last week with the submission to Stabilization Director Fred M. Vinson of a plan for a percentage subsidy for stripper-well production, estimated to cost the government between $50,000,000 and $75,000,000.

The plan was worked out by Sumner Pike, OPA fuel price director, and perfected following a conference with stripper and independent producers last month.

Confining his relief program to just the one class of operators, Pike proposes to increase the price to be paid for stripper-well production on a percentage basis aimed to make such operations profitable. Refiners would be compensated for the higher prices paid by Defense Supplies Corporation. By compensating the refiners, the government will have to maintain only a fraction of the number of accounts which would be necessary if the individual operators were compensated directly.

Reportedly, stripper-well operators are to receive an advance of 30 percent over the market for wells producing up to 5 barrels daily, 20 percent on production between 5 and 6 barrels and 10 percent on production between 6 and 7 barrels, all based on the field-average price. Marginal wells in fields of better production will be taken care of, also, it was said.

Pike's announcement that he planned to submit his proposal to Vinson came following another conference March 13 with Ralph T. Zook, president, and Russell B. Brown, general counsel of the Independent Petroleum Association; J. D. Sandifer, Jr., president, and Howard J. Whitehill, secretary of the National Stripper Well Association, and Don T. Andrus, president of the Pennsylvania Grade Crude Oil Association, at which the views of the three organizations with respect to price relief were laid before the OPA official.

There were indications that OPA action to relieve the situation will not stop with the stripper wells and that some program for the encouragement of wildcatting and the adoption of secondary recovery methods may be proposed if Vinson approves Pike's stripper well recommendation.

These three branches of the producing industry have been held by OPA officials to be the proper beneficiaries of price relief in some form, but it has consistently been contended that no assistance is required for flush or high-pump production.

It was reported that OPA is studying the wildcat and seconday-recovery situation with a view to developing an arrangement which can be put into effect with minimum difficulty.

That OPA would consider secondary recovery and wildcatting assistance was disclosed to the independent producer representatives who conferred with Pike last month.

At that time the operation of the proposed stripper-well subsidy was outlined by Pike, who explained it would apply not to particular wells but the areas or fields and would be based on a field average of production over a specified period, the latter being to avert the possibility of producers holding output down to receive a higher percentage bonus than they would normally be entitled to.

OPA statisticians estimated that the sliding-scale subsidy would cover 50 to 60 percent of all producing wells and 10 percent of all oil produced in the country.

Says No Texas Sweet Gas For Channel Carbon Black

The Texas Railroad Commission will not permit the use of sweet gas for the manufacture of carbon black by the channel method. This ruling was contained in a letter written last week by Commission Chairman Beauford Jester to Thomas J. Starkie, Chief of the Pigment and Color Unit of the War Production Board.

PAW Form 35 Now Abolished

A revision of P-98-b and abolition of Form 35 was announced by PAW March 18 in an effort to expedite the acquisition of materials by production operators.

The amendment provides that production operators no longer need file for anticipated controlled materials requirements in advance, and no preference rating will be required on purchases of less than $2500 in which no single item costs in excess of $500.

The order assigns the allotment symbol "P-1" for use on controlled material orders. Prior approval will continue to be required on orders in excess of $2500 or on individual items costing in excess of $500, the original application to be filed with the PAW district office and accompanied by two carbon copies.

The amended order was made effective immediately, and PAW announced no further Forms 35 would have to be filed for the first or second quarters of this year.

Import Recommendations For Oils Eliminated

Import recommendations from countries of destination will no longer be required by the Foreign Economic Administration to accompany applications for licenses to export certain petroleum products principally oils, motor fuels and blending agents, to most of the American republics.

The simplification of requirements, announced by FEA March 16, is intended to eliminate some of the paper work burden on exporters, it was explained, and does not necessarily indicate an improvement in the supply situation, and exports of these commodities will continue subject to quantity and other limitations of the War Production Board and other war agencies.

Countries to which exports may be made without import recommendations are Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecquador, Guatemala, Haiti, Honduras, Panama, Paraguay, Peru, Uruguay, and Venezuela.

Los Angeles Basin Chapter API Changes Meeting Date

In order to avoid too close proximity with the spring district meeting in the Biltmore Hotel, it has been decided to advance the date of the Los Angeles Basin Chapter of American Petroleum Institute to Tuesday, April 11.

Junior Chapter AIME Meets

The Southern California Junior American Institute of Mining and Metallurgical Engineers met in Huntington Park, California, on March 9. W. W. Porter II, geologist for PAW, spoke on the relation of geology to discovery and development of petroleum.

Oil Investigating Body, Enlarged To 11 Senators, Ready to Convene

Striking out that section of the preamble quoting Administrator Ickes as stating that the United States is not now in a position "to oil another war," and increasing its membership to 11, the Senate on March 13 approved the Brewster-Moore resolution setting up a special committee to conduct a full-dress investigation of the world petroleum situation.

Originally contemplated to be composed of three members, each, from the Senate Committees on Foreign Relations, Interstate Commerce and Commerce, the investigating commitee, as approved by the Senate, will consist of two members from each of those committees, plus two members from the Committee on Public Lands and Surveys and three members to be appointed by the president of the Senate.

The committee, with a $25,000 appropriation for expenses, is "to make a full and complete study and investigation with respect to petroleum resources, and the production and consumption of petroleum and petroleum products, both within and outside the United States, in their relation to our national welfare and security." It is to make a report to the Senate of the results of its inquiry, with recommendations for the formulation of a national petroleum policy.

Offered as a substitute for the resolution calling for an investigation and dissolution of the Petroleum Reserves Corporation, the authority for the inquiry is sufficienty broad to permit full development of the Saudi Arabian pipeline project, announcement of which was the springboard for the demand for the probe.

Membership of the committee was named by Vice President Wallace March 14, as follows: From Committee on Foreign Relations: Senators Tom Connally of Texas (Dem.) and Arthur H. Vandenberg of Michigan (Rep.); Interstate Commerce Committee: Senators Edwin C. Johnson of Colorado (Dem.) and E. H. Moore of Oklahoma (Rep.); Committee on Commerce: Senators Francis Maloney of Connecticut (Dem.) and Ralph O. Brewster of Maine (Rep.); Public Lands Committee, Senators Joseph C. O'Mahoney of Wyoming (Dem.) and Chan Gurney of South Dakota (Rep.); at large: Senators Burnet R. Maybank of South Carolina and Scott W. Lucas of Illinois (Dem.) and Robert M. LaFollette, Jr., of Wisconsin (Prog.).

In a speech on the floor of the House March 16, Representative Jerry Voorhis of California charged that the State Department had approved the Saudi Arabian pipe line project solely because of the insistence of the joint chiefs of staff, declaring that he had been told by Charles B. Raynor, department adviser on petroleum policy, that no independent consideration or study had been made.

Voorhis said that the department did have a representative who went to Arabia to look over the project, who submitted an adverse report on the PRC agreement and that a similarly adverse report was submitted to the War Department by the representative it sent to the Middle East.

Naylor Commended as He Quits PAW Materials Job

C. Edward Naylor has resigned as District 3 director of materials and will be succeeded by James Thompson, formerly purchasing agent for the Shell Pipe Line Company at Houston, it was disclosed by PAW last week.

C. E. NAYLOR

Naylor, a native of Palestine, Texas, joined PAW in January, 1943, after a long career in the railroad and railroad supply business and, beginning in 1924, as president of the Maintenance Engineering Corporation, which he founded. In the last war he served as a captain of infantry.

As director of materials for District 3 over a period of 14 months, he was in one of PAW's "hot seats," responsible or maintaining the flow of materials necessary to carry on the production operations of the southwestern area.

"Ed Naylor has done a splendid job, and is to be complimented for having set the interests of his company aside to become more intimate, as district director of materials, with this country's war program," Frank Watts, PAW director of materials, said in discussing his work.

His resignation, Watts said, was due to Naylor's desire to return to the active management of his company.

Would Condemn Elk Hills And Have Navy Operate

Congressional opposition to any new contract made by the Navy for operation of its Elk Hills reserve by an oil company was hinted last week by Representative Jerry Voorhis of California.

Voorhis, who first disclosed the details of the Navy's original contract with Standard Oil Company of California, made it known that he would seek to defeat any legislation which may be offered, authorizing the Navy to contract with private firms for operation of the reserve.

Instead of such a contract, he held, the government should take over all lands in the reserve, by condemnation, and exploit them as sole owner.

Bill Would Enable Navy Contract With Standard

Legislation authorizing the Navy Department to enter into a contract with Standard Oil Company of California for the cooperative development of the Elk Hills reserve was asked of Congress March 15 by Secretary Frank Knox.

The legislation was urged in a letter to Speaker Sam Rayburn in which Knox also proposed enactment of a bill to permit the Navy to acquire, by purchase or condemnation, additional lands in Elk Hills and Buena Vista Hills, outside the confines of the reserve but within the same geological structure.

Knox said the proposed measures have been approved by the Budget Bureau.

In the House, on March 16, Representative Jerry Voorhis of California announced that the Navy is dispatching a party of experts to the vicinity of Point Barrow in Naval Petroleum Reserve No. 4 and that in the near future the War Department will undertake investigation of fields in southern Alaska.

Voorhis' main theme, however, was the Elk Hills contract and the Saudi Arabian pipe line, to both of which he is opposed. He criticized the various provisions of the new contract drawn by the navy for the development of Elk Hills by Standard Oil Company, although he admitted it was a decided improvement over the original agreement, which was abrogated last year. However, he said, the only satisfactory way in which the issue can be settled is for the government to condemn private lands and take over the entire reserve.

Occupational Deferment Order to Be Clarified

Recent new regulations of the Selective Service tightening up on occupational deferments for men between 18 and 26 have proved so menacing to war and essential industries which now must depend on such men for a large part of their skilled labor that the matter has been taken to the White House, where President Roosevelt is expected shortly to issue a clarification of his February 26 memorandum calling for a review of all occupational deferments.

A result of the review has been a cracking down of draft boards on unmarried men holding occupational deferments which threatens to deplete many important plants of their key men. In many areas, it is said, draft boards have considered the President's memorandum to mean that they should take such men before calling up pre-Pearl Harbor fathers.

It is pointed out that many industries, especially those developed since the war, are especially dependent upon young men just a few years out of college. It is estimated that one fourth of the specially trained technical men in the high-octane gasoline plants are under 26, while in the rubber industry the loss of such men is seen as a serious threat to the war effort.

Would Let Small Business Share in All Surpluses

Disposition of surplus property owned by the government at the end of the war in such a way as to channel much of it into the hands of smaller business enterprises is urged in a report submitted to the House last week by its Committee on Small Business headed by Representative Wright Patman of Texas.

Even in advance of the close of hostilities, the committee recommended that

patents and other properties seized by the government and now held by the Alien Property Custodian for which there is no obvious military use should be declared surplus and sold.

Sale of patents is opposed by APC, who contends that the present policy of issuing royalty-free licenses was adopted at the direction of President Roosevelt.

The committee agreed with the suggestions of the Baruch-Hancock report for setting up business advisory committees to assist the proposed Surplus Property Policy Board and a central disposal agency, but held that all such committees should include at least two small business men from each of the several classes—manufacturers, wholesalers and retailers—to be represented.

The report held that provision should be made for lease or sale of surpluses on credit to expand the opportunities of small business, and that the possibilities should be studied of subdividing the largest government-owned plants to make them available for acquisition by small business.

Increased Demand for West Texas Oil Is Reported at Statewide Hearing

Increased demand for West Texas crude oil was reported to the Texas Railroad Commission at its statewide hearing in Austin March 7. The new Stanolind Pipe Line Company line from West Texas to Cushing, Oklahoma, will be ready for operation by April 1, representatives of the company said, and therefore it will be necessary to increase allowables for Slaughter and Wasson by 15,000 barrels each.

Purchasers filed nominations totalling 2,133,796 barrels, an increase of 89,000 barrels over March. The allowable last week totalled 1,985,000 barrels, which means production of approximately 2,122,000 barrels when 137,000 barrels of unprorated production is added.

The PAW certification for April is 2,043,000 barrels, up 78,000 barrels above March.

Stanolind Pipe Line Company officials said that they had been requested by PAW to build a 35,000-barrel loading rack at Cushing which would handle the oil now being taken from the Midland loading rack. This installation is to be completed by May 1, and allowables in West Texas will have to be shifted so that the oil can move north through the line to Cushing. This will require 65,000 barrels above the March allowable for Wasson and Slaughter.

The pipe line will be ready for operation by April 1. Approximately 508,000 barrels will be required for line fill. There is now in storage 450,000 barrels, 80 miles of the line has been filled, and 312 miles remain to be filled.

Magnolia Pipe Line Company said that its line from Midland to Corsicana has been in operation for about 10 days. From Corsicana it will deliver 27,000 barrels daily to Magnolia Petroleum Company's refinery at Beaumont. Another 10,000 barrels will move from Beaumont north through the line Sun Pipe Line Company has reversed, and 5000 barrels daily will be delivered to The Texas Company.

Ohio Oil Company asked that Yates be permitted to produce 26 days in April, and Panhandle operators asked for the same number of producing days.

Talco Pipe Line Company reported it had lost some of its tank cars to PAW, and therefore reduced its Sulphur Bluff nominations 445 barrels to 3770 barrels per day, Coke 347 barrels to 2078 barrels, and Talco down 1800 to 5500 barrels per day. This will require six shutdown days for Talco in April.

Humble Oil & Refining Company, however, has been able to get some additional tank cars to move crude from Hawkins. It raised its nominations 8300 barrels to 31,500 for that field. Some of this increase will go to District 1 by tank car, the remainder will be moved by pipe line to the Mississippi and then north by barge.

The commission corrected its report on the bottom-hole pressure drop in East Texas. Instead of a drop of 7.73 pounds for February, the drop was only 6.73. Bryan Payne, representing the East Texas Salt Water Disposal Company, said that 80 percent of the water was injected in February, and that an increase for March was expected. He pointed out that the field produced 23 of 29 days and thought this accounted for the decline. Therefore, he thought the field could produce 23 days in March, without hazard. H. P. Nichols, representing an operators association in the field, disagreed with this conclusion. He said many operators were complaining to him, and wanted the field to produce no more than 20 days.

Frank Spellers, engineer, said that the average drop failed to reflect local conditions, and suggested a breakdown of the survey by years. He complained, too, about the transfer clause. He said that the commission requirement that all royalty owners agree before a transfer could be made had proven to be a joker clause. He thought the commission should require only the principal royalty owners. Some of them could not be found, others could not be reached, and still others declined to answer their mail, Spellers said. Therefore it was virtually impossible to effect the transfer.

Commission Chairman Beauford Jester said that the same complaint had come from B. E. Warren of Sun Oil Company, and that a conference with the commission on this subject had been arranged for March 20, at which Warren would appear. Jester invited Spellers to attend this conference also.

Warren disagreed with the commissioner. He pointed out that his problem involved leases to which oil would be transferred, not leases from which oil was transferred. Jester, however, said that the commission might well thrash out the whole problem at one meeting.

Sinclair Refining Company asked for an increase from 30 to 88 barrels per well for the Washburn Ranch field, La-Salle County. The allowable has been down recently because the oil was trucked out. The company will complete a pipe line to the field about April 1.

Humble Pipe Line Company reported an increase of 7300 barrels in its demand for heavy Coastal crude, and asked that the commission increase allowable in the following fields so that the oil could be supplied in April: Amelia, Sugarland, Webster, Clearlake, Danbury, Magnet, Mykawa, Mykawa New, Thompson and Thompson South.

Bell Oil & Gas Company will need 1000 or 1500 barrels more North Texas oil in April to supply cracking stock for the new 100-octane plant being constructed at Duncan, Oklahoma. So far it has been unable to purchase the additional oil.

Panhandle operators asked that the area be allowed to produce 26 days in April.

PAW Lists Increase for Texas Allowable in April

PAW last week ordered an increase for Texas in the production allocation for April to 2,043,000 barrels per day, an increase of 78,000 barrels over March. However, an exact comparison cannot be made since the telegram from PAW was confusing because the figures would not check with those received previously.

PAW directed that 45,000 barrels of the increase be made available to the new Stanolind Pipe Line Company line from West Texas to Cushing, Oklahoma.

The telegram in full is set out below:

"The Petroleum Administration has certified that the total production of all petroleum liquids including but not limited to crude oil condensate and natural gasoline in Texas during April, 1944, shall be 2,043,000 barrels daily.

"Of the amount so certified 1,916,000 barrels daily is crude oil which represents an increase of 78,000 over the amended crude oil rates of 1,853,000 certified for March. The 1,916,000 crude oil production rate certified for April represents an increase of 63,000 barrels over the indicated actual production for March of 1,853,000 barrels as estimated from your allowable schedules.

"The Petroleum Administration has further certified that 45,000 barrels daily of the increased production which will be required to meet the April certification shall be produced from sour-crude-oil fields tributary to the Slaughter terminal of the Stanolind pipe line into the Cushing, Oklahoma, area."

Hudspeth-Culberson Counties in Report

Oil possibilities of the Sierra Diablo region, Hudspeth and Culberson Counties, Texas, are reviewed by the Geological Survey in a preliminary report and map, obtainable from the Survey at 40 cents a copy by referring to "Oil and Gas Investigations—Preliminary Map 2."

The map covers an area of 1250 square miles on a scale of approximately 1 inch to the mile, and includes structure sections and an inset map showing details of the structural features, accompanied by a brief text.

The area was studied by the survey as part of a general investigation of the oil and potash-bearing Permian rocks of West Texas and Southeastern New Mexico, and is published now because of current interest in petroleum possibilities.

Deteriorating Inventory of Gasoline Forces Cut in Motorists' Rations

Announcement of reductions in rations of gasoline to the public, effective March 22, was not surprising to those who have been observing trends of production and stocks, for the gasoline inventory situation has been steadily deteriorating for several months, with apparently no hope for improvement except through the curtailment of civilian use.

In the week ended March 11 there was, as in most other weeks recently, only a subnormal seasonal accumulation of gasoline storage, resulting in further impairment of the gasoline stocks situation. At the beginning of the week, stocks were 7.2 percent lower than one year previously and by the end of the week they were 8.2 percent under the 1943 trend.

Summarized, the industry's operations in the week of March 11 were as follows: Although crude-oil production was lower than in the previous week, runs to stills were higher; the chief benefit from the higher runs was an increase in production of residual fuel oil, permitting some accumulation of that product in storage; production of gasoil and distillate fuel was seasonally off, and reduction in stock was seasonal; while a reduction in gasoline production doubtless occurred through necessity rather than choice, preventing accumulation of storage in volume normal for this season.

In averaging 4,381,000 barrels daily in the week of March 11, United States crude production, although down 32,000 from the week before, was 504,000 barrels a day or 13 percent higher than in the corresponding week last year.

Crude runs to stills, at 4,387,000 barrels daily, were up 43,000 from the previous week and 841,000 barrels daily or 23.7 percent higher than in the like week a year ago. Withdrawal of crude from storage evidently occurred, with runs above production, although in the previous week, ended March 4, there was an addition to crude-oil stocks, which currently are practically the same as a year ago.

Production of gasoline was 29,000 barrels a day lower in the week of March 11 than in the previous week and 433,000 daily or 30.2 percent higher than in the corresponding week last year. The 468,000 barrels added to storage during the week was less than half the

Crude Price Change

Shell Oil Company has placed Gibson field, Louisiana, on a separate crude-price schedule which involves a 1-cent per barrel reduction for lower gravity grades but increases ranging up to 11 cents a barrel for lighter grades. Crude from the field now is priced at 88 cents for grades under 20 gravity, with 2 cent differential to $1.30 for 40 gravity and above. Formerly, these oils were bought under the schedule of the South Houma and West Lake Verret fields, which continues at 89 cents for below 20 gravity, with 2-cent differential to top of $1.19 for 34-gravity and above.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED March 18	March 11
Alabama	25	25
Arkansas	79,300	79,300
California	827,300	824,600
Long Beach	30,100	29,950
Midway-Sunset	56,450	56,100
Kettleman Hills	43,050	42,800
Wilmington	103,000	102,400
Rest of State	594,700	593,350
Colorado	7,700	8,250
Florida	45	45
Illinois	217,500	219,300
Salem	26,100	25,800
Louden	35,600	35,600
Other New Pools	144,800	147,300
Old Pools	11,000	10,600
Indiana	15,300	13,160
Kansas	287,700	263,200
Kentucky	24,950	23,050
Louisiana	360,550	360,500
North Louisiana	76,550	76,500
South Louisiana	284,000	284,000
Michigan	53,500	52,500
Mississippi	39,100	43,300
Missouri	100	100
Montana	23,859	23,870
Nebraska	1,260	1,240
New Mexico	113,000	113,050
New York	13,150	13,800
Ohio	8,500	9,100
Oklahoma	329,500	328,300
Oklahoma City	46,600	47,000
Seminole Area	69,600	69,450
Rest of State	213,300	211,850
Pennsylvania	38,700	43,100
Tennessee	30	30
Texas	1,863,000	1,863,550
Upper Gulf Coast	513,900	513,750
East Texas Field	365,000	365,000
Rest of Eastern Texas	116,400	116,800
Lower Gulf Coast	196,900	197,000
Southwest Texas	74,650	74,800
South Central Texas	19,800	20,000
West Texas	341,000	341,000
North Texas	142,550	142,500
Panhandle	92,800	92,700
Utah	12	12
West Virginia	8,300	8,800
Wyoming	92,500	93,100
Total United States	4,404,881	4,385,282

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gasoil and Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	[1]4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	46,187	11-27	72,881	1- 2
1944	4,423	2-26	[1]4,453	1- 1	240,992	1- 1	86,559	3-11	42,310	1- 1	57,330	1- 1
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	237,137	2-26	76,302	1- 1	32,705	3-11	51,175	3- 4

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Runs to Stills Daily	Stocks Week End	Gasoline Production Weekly	Stocks Week End	Gasoil and Distillate Production Weekly	Stocks Week End	Residual Fuel Production Weekly	Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,990
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	[1]4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 5	4,400	4,324	239,145	13,192	81,784	4,138	36,023	9,087	52,734
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 4	4,413	4,344	237,763	13,267	86,091	4,513	33,145	8,590	51,175
March 11, 1944	**4,381**	**4,387**	.....	**13,068**	**86,559**	**4,243**	**32,705**	**8,796**	**51,362**
March 13, 1943	3,877	3,546	[4]235,686	10,038	94,280	4,013	34,427	6,984	68,455
Change:									
In week	−32	+43	+626	−199	+468	−270	−440	+206	+187
In year	+504	+841	+2,077	+3,030	−7,721	+230	−1,722	+1,812	−17,093
In year	+13.0%	+23.7%	+0.9%	+30.2%	−8.2%	+5.7%	−5.0%	+25.9%	−25.0%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, March 6, 1943.

normal increase for this period of the year, with spring-summer demand just ahead. The stocks of 86,559,000 barrels of finished and unfinished gasoline on hand March 11 were nearly 8,000,000 barrels or 8 percent less than the 94,280,000 barrels on hand March 13 last year.

Refinery output of gasoil and distillate fuel was down about 40,000 barrels daily from the previous week but exceeded production in the corresponding week a year ago by 33,000 barrels daily or nearly 6 percent. Stocks of these oils were drawn upon to the extent of 63,000 barrels daily, a seasonal withdrawal, but less than in the like week last year; and the inventory of 32,705,000 barrels at the end of the week was 1,722,000 barrels or 5 percent less than the 34,427,000 barrels held March 13 last year. At the beginning of the week the storage was only 2.5 percent less than a year previously.

Residual fuel oil production was 30,000 barrels a day larger than the week before and 260,000 barrels a day or 26 percent greater than in the like week last year. This permitted running of 27,000 barrels a day to storage. The inventory of 51,362,000 barrels held March 11 was, however, 17,093,000 barrels or 25 percent less than that of 68,455,000 barrels held March 13 last year.

Crude Oil Production Increased During Week

Production of crude oil in the United States climbed upward during the week ended March 18, to reach a total of 4,404,881 barrels, an increase of 19,599 barrels over the total last week of 4,385,282 barrels.

Outside slight decreases in Illinois, Mississippi, and the Eastern States, and a few that remained the same, most states reported increases in production. Leading the list was Kansas with 24,500 barrels more than last week. California, Indiana, Kentucky, also, increased by 2700 barrels, 2140 barrels, 1900 barrels, and 1000 barrels, respectively. Other changes were minor.

Increase in Oil Price Ceilings for Three Areas

Price increases ranging from 10 to 13.3 cents per barrel were announced by the OPA March 16 for three fields in Arkansas and Louisiana, one to be retroactive to last January 12 and the others to be effective March 22.

As from January 12, the OPA increased the price of heavy crude at receiving tanks in the Urbana field, Union County, Arkansas, by 13.3 cents, from 74.7 to 88 cents per barrel. The field has a production of approximately 400 barrels a day, all purchased by one concern from two producers. The oil is used for the manufacture of asphalt and the purchaser has agreed to absorb the increase. Producers' cost data showed that it was uneconomic to continue at the former price.

In Louisiana, the ceiling at the receiving tank for crude petroleum and crude distillate in the South Elton field, Jefferson Davis Parish, is increased 12 cents per barrel from $1.18 to $1.30 for 40-degree gravity and over, with the customary 2 cents per degree differential. There is only one well in existence, which will be reopened by the owner.

At Tullos-Urania field, LaSalle Parish, Louisiana, the ceiling will be increased 10 cents a barrel from $1.15 to $1.25, applying to a current production of approximately 2000 barrels daily.

The OPA order also clarified the situation in California with respect to fields not named when maximum prices were established for certain fields in April, 1943, but which based their prices on the prices of the specified fields. The method to be followed in determining prices in those fields is provided, but will create no change in maximum prices, it was said.

Operators Oppose Plan For Second Sand at Yates

Opposition to an application of Plymouth Oil Company to have some of its wells classified as producing from a separate zone in the Yates field, Pecos County, developed at a Texas Railroad Commission hearing last week. The wells are producing from the Riverbed sand which is found just above the Brown lime, the principal producing zone in the Yates.

Plymouth Oil Company has two wells on one of its leases completed in this sand and asked that they be prorated separately and on a different basis from other wells in the field.

Representatives of several other operators attended the hearing and brought out that more than a third of the Yates producers are completed in the Riverbed sand, thus any change for these two wells would affect over a third of the wells in the field.

P. P. Gregory, chairman of the Yates Engineering Committee, testified that the Riverbed sand is one of several producing zones in the Yates horizon and that there was communication between these various zones. For that reason he concluded that they were all part of a common reservoir and contended that they should all be subject to the same proration regulations.

Hugoton-Blackwell Pipe Line Completed

Cities Service Transportation & Chemical Company has completed a 230-mile 26-inch welded gas line from the Hugoton gas area, Oklahoma, to Blackwell, Kansas. Construction is under way on a hydration plant near Guymon.

The new line ultimately will deliver 240,000,000 feet of gas per day and will carry an initial load of 140,000,000 feet which was turned into the line March 15. Equipment includes a compressor station 15 miles north of Guymon, nearing completion, which has eight main units of 1000 horsepower each.

Bechtel-Dempsey-Price Company constructed the line.

California Gas Line Awaiting WPB Approval

A proposed 150-mile gas pipe line to be built by Southern California Gas Company from Goleta, Santa Barbara County, to Los Angeles is now awaiting approval by WPB.

North Texas Crude Oil Moving to Canada

The Texas Company is shipping 1400 barrels of North Texas crude oil daily from Electra to British-American Oil Company's refinery at Moose Jaw, Saskatchewan, Canada.

Program Announced for Dallas Geological Meet

The American Association of Petroleum Geologists, the Society of Economic Paleontologists and Mineralogists and the Society of Exploration Geophysicists have released the final program of their joint annual meeting and second wartime conference, to be held at the Baker Hotel, Dallas, March 21-23.

Registration for all three societies will begin Monday, March 20, at 1:00 p.m. Committee meetings and conferences will take up the morning and afternoon hours of Tuesday. Tuesday evening the AAPG research committee will hold an open meeting, with M. G. Cheney presiding, which will feature two talks: "Survey of Geology Students," by A. I. Levorsen of Tulsa, and "Radioactivity and Organic Content of Some Paleozoic Shales," by Roland F. Beers of the Massachusetts Institute of Technology.

The joint session of the three societies will begin at 9:30 a.m. Wednesday, March 22, presided over by Joseph M. Wilson and Ira H. Cram. "A Review of Petroleum Geology in 1943" will be made by F. M. Van Tuyl and others of the Colorado School of Mines; F. H. Lahee, Sun Oil Company, Dallas, will discuss "Wildcatting in 1943"; and addresses will be given by J. Harlan Johnson, Colorado School of Mines, and R. D. Wyckoff, Gulf Research and Development Company, Pittsburgh, the presidents of SEPM and SEG.

Following a business meeting of AAPG with A. R. Denison presiding, an afternoon joint session under the leadership of R. W. Clark and S. A. Thompson will hear an address by Denison, who also will preside over the presentation of honorary members of AAPG. Highlights of the meeting will be illustrated papers on "The United States Geological Survey in Wartime," by its director, W. E. Wrather; "Notes on the Near East," by E. DeGolyer, Petroleum Reserves Corporation, and "Trimetrogon Mapping," by Lt. Col. Gerald Fitzgerald, Army Air Forces.

K. C. Heald will preside at an evening session Wednesday, when T. S. Oakwood of Pennsylvania State College, will talk on "The Role of Chemistry in the Origin of Oil."

The AAPG will hold a technical session presided over by Cary Croneis and F. H. Lahee, Thursday morning, at which time studies of "Florida and Georgia," "China," and "South America" will be presented by Esther and Paul Applin of Fort Worth, J. Marvin Weller, Illinois Geological Survey, Urbana, and John L. Rich, University of Cincinnati.

The afternoon technical session will be a symposium on well spacing presided over by Charles B. Carpenter and R. E. Rettger. Stuart K. Clark, Continental Oil Company, Bartlesville, will discuss "Well Spacing—Its Effects on Recoveries and Profits"; "Petroleum Reservoir Efficiency and Well Spacing" will be presented by Stuart E. Buckley, Humble Oil & Refining Company, and "Factors to Be Considered in Well Spacing" will be given by M. G. Cheney, Anzac Petroleum Corporation, Coleman. The technical session will be followed by the annual business meeting of AAPG, when announcement of the election of officers will be made.

Western Canada to Have Busiest Year In 1944; Much Work Under Way

This has been a "winterless winter" on the Great Plains of Southern Alberta, bringing little interruption in exploration and field development. A certain amount of seismographic work and general geological research has continued through the winter, and with the approach of spring it is generally forecast that the plains at last will get an important play. Operators in the Alberta basin are formulating plans for an intensive search for new fields and extension of proven areas. It is bound to be the busiest year Southern Alberta oil fields has seen.

For 50 miles north into Alberta from the Montana border, the potential oil acreage has been covered by lease. Large sections of this area, which includes the Blood Indian Reserve, have been covered by seismographic crews.

Regulations Made Favorable

More favorable lease reservation rules governing oil and gas rights in the province have been passed, and this will encourage drilling. Under the new plan it is possible to reserve up to 10,000 acres on payment of a fee of $250 and in addition making a returnable deposit of $1 an acre as a guarantee that work will be carried out, on the acreage, to that amount.

The deposit will be released as the work progresses, but information gained in the course of the development must be released to the government. Machinery must be on site within 60 days and if commercial production is obtained, the applicant must immediately lease the area selected. The regulations really mean that a person who intends to lease land and will begin operations within 60 days, can arrange to have his expenditures applied to the first year's rentals of any leases he may hold. The reservation is for 60 days, renewable for 90-day periods, but cannot exceed one year.

Key Tests Near Completion

Extent of the 1944 development in Alberta plains areas largely hinges on a number of wells now nearing completion. One of these is the Texas-Pinhorn (McColl-Frontenac) in Sec. 8, Twp. 1, Rge. 8, W4, in the far southeast tip of Alberta and north of the Whitlash field in Northeastern Montana. Several heavy flows of gas have been found, reported wet. One of these was encountered in the basal Ellis from 3211-3231 feet. It was 4,000,000 feet while a previous strike of 5,000,000 feet was encountered at 2970 feet. The first strike showed pressure of 1300 pounds and the second 1600 pounds. The well will be carried to the Madison lime.

Another pivotal well is Pacific 1 in the Del Bonita field, just north of the Cut Bank field, Montana. This well is testing at 5080 feet a porous sand that is yielding light oil from the lime. It is being perforated and acidized, and the results are not yet known although the owners, Frank Ruben and associates, have stated it is a commercial well.

Taber Field Important

The Taber field 34 miles east of Lethbridge already has 10,000 barrels a day of 19-gravity crude available for market just as soon as it can be disposed of. Dominion Oil Company has half a dozen or more wells producing in the Taber field, but it has had a marketing problem that has shut down the wells temporarily. Taber is a spotty field, but extensive sand bodies may be found.

The Taber field is the first Alberta field outside Turner Valley to produce a 500-barrel well. It has given two wells of that size, flush production, at roughly 3200 feet in the Taber sands. Mid-Continent brought in a well in February 10 miles south of the Taber producers which is swabbing heavy base oil at the rate of around 50 barrels a day. It is seven miles north of Wrentham.

Deepest Cable Tool Test

In the Southwestern Alberta foothills are the Arrow-Marjon well now drilling at 1700 feet and the Maxmont-Lundbreck well, the world's deepest cable-tool job, is down to a depth of more than 9700 feet. It has 6800 feet of 8-inch hole. It began drilling in the fall of 1934. It has had 24 fishing jobs, some of them tough. News of the well has been skimpy but it is known several promising oil zones have been cemented off for later attention as the synidcate was aiming at the deep Madison. It is on the Watson structure in the broken foothills area.

Plans of the operating companies on the plains have not all been worked out but several companies have indicated their programs.

Lion Oils, Ltd., owns an 18,000-acre lease in the Taber field and has a well close to the Taber sands. It proposes to move the rig to a new location and to complete Lion-Taber 1 with cable tools. The company has drilled three shallow test holes and proposes to drill more.

Imperial Oil is running three strings of wildcat tools in Alberta. The most important of its tests on unproven acreage is at Wildcat Hills, northwest of Cochrane, which should be completed by the middle of March, whereupon the drilling equipment will be available for drilling the Coalspur structure. This is a large outer foothills fold, which the company intends to test with a deep well whose objective is the Rundle limestone at approximately 10,000 feet. In South Central Alberta, Imperial intends drilling a test on the east side of the Erickson Coulee structure, east of Coutts on the Montana border. The company's third wildcat string is drilling Imperial-Scope 1, near Vauxhall, north and east of the Taber field. The company is planning three wells in that area.

Oil Products High in Russian Lend-Lease

A total of 740,000 tons of aviation gasoline and other oil products have been sent to Soviet Russia under lend-lease in two years, it was disclosed last week by the Foreign Economic Administration.

Ten percent of the supplies furnished Russia during that period — 8,400,000 tons valued at $4,243,804,000 — was represented by shipments of oil products and 145,000 tons of refinery equipment being constructed with the assistance of American engineers to produce gasoline and other products from Russia's oil resources.

Twice more tonnage moved to Russia last year than in 1942 and a much greater percentage reached its destination, the FEA report showed. In 1942 the Germans sank 12 out of every 100 ships traversing the Atlantic route to Murmansk, but last year they got only 1 of each 100.

Colombian Petroleum Developing New Field

Eight producers have been completed in the field opened by the Colombian Petroleum Company, 20 kilometers north of the old Petrolia field, in the Barco concession. In the new field which adjoins Rio Tabu, the company has one rig in operation, two more rigs waiting on equipment, and two yet to be delivered.

The structure on which the field is being developed embraces an area 15 by 3 miles, according to geological mapping. Sand thicknesses and porosities have been found to vary greatly from well to well (on 90-acre spacing) without regard to structural location. Best producing acreage is thus recognized as being "spotty" and not predictable.

Six of the wells are producing from Eocene and two from Cretaceous.

American Companies Busy With Santo Domingo Tests

Dominican Seaboard Oil Company, with Standard Oil Company of New Jersey, now holds concessions in the Dominican Republic totalling several million acres. The Seaboard Company also has a participating interest in a large concession held by The Atlantic Refining Company in Haiti, in the western part of the same island.

Negotiations between the government and commercial interests were initiated in 1934, and the first drilling venture was undertaken in 1939, resulting in the Maleno discovery. This well which is reported to have blown-in at 600 feet, yielding 600 barrels of oil per day, with large amounts of water, drowned out after producing 17,000 barrels of oil. In the meantime, dry holes have been drilled all around the discovery.

A number of dry holes have been drilled on the nearby Higouto structure, where many oil seepages occur. Unsuccessful tests have been put down

near Quita Carizza (4500 feet), and on the El Magote structure (7000 feet).

Locations have been made for wildcat tests of Las Hormigas structure and big El Commendadora closure area, both in Dominican Republic. Six tests are planned during 1944, with two rigs operating continuously. In addition, The Atlantic Refining Company has moved a rig from Cuba and is drilling the first well on its concession in Haiti, with Seaboard Oil Company holding a joint interest.

Companies Operating in Colombia Total 65

The ministry of petroleum of Colombia has released a list of 65 registered corporations engaged in the production, transportation and refining of petroleum in that country. Largest of the group, from the standpoint of capitalization, is Shell Oil Company of Colombia, capitalized at 15,000,000 pesos. Compania Petrolera El Libertador, second largest, is capitalized at 10,000,000 pesos, only partly subscribed. El Condor Regalias and National de Carare are all utilizing invested funds in excess of 3,000,000 pesos, and more than a dozen others have working capitals amounting to more than 1,000,000 pesos. It is reported that Regalias is in process of liquidation, as a result of recent unprofitable explorations, and that it will be merged with Tropical Oil Company. The latter is listed in the register of the ministry of petroleum, but its capitalization is not stated. It is known to be one of the largest operating companies in Colombia, however.

U. S. Navy Air Forces Photo

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Prince Edward Island Wildcat Drilling Resumed

Drilling has been resumed at the wildcat well in the middle of Hillsboro Bay, seven miles from the shore of Prince Edward Island, Canada, after repairs to cribbing caused by drift ice. Operations were suspended early in January, after hole had been made to 3700 feet. Steel piling will shield the wooden cribwork against further damage by ice. The well is being drilled as a joint project of the Cities Service Oil Company and Socony Vacuum Oil Company.

Atlantic to Drill Pantepec Concessions

The Atlantic Refining Company has completed arrangements for drilling at least 8 exploratory holes on concession tracts totalling more than 326,000 acres, held by Pantepec Oil Company in Venezuela. Under terms of agreement Atlantic will complete at least 8 wells before March 31, 1947, and will pay all drilling expenses and Venezuelan taxes accruing from January 1, 1944, to the date of completion of the drilling program.

This exploratory drilling program of the Atlantic Refining Company does not affect the previous arrangement between Pantepec and Creole Petroleum Corporation for development of the El Roble field, where 10 wells are now producing, or the Mulatta field, with its 40 producing wells.

Study on Hydrocarbons

The Department of Publications of the Colorado School of Mines, Golden, announces the publication of "Hydrocarbons of the Uinta Basin of Utah and Colorado" as volume 39, number 1 of the *Quarterly* of the Colorado School of Mines.

Under this title are included treatments of two phases of the subject: "Review of Geology and Field Work" by Clark F. Barb, professor of petroleum engineering, and "Survey of Bitumen Analyses and Extraction Methods" by James Ogden Ball, associate professor of petroleum engineering.

Professor Barb has included in his paper, in addition to a discussion of past field work, considerable new material which has resulted from his recent work in the basin. Adding to the value are also 17 figures and two plates, both 16 by 22-inch maps of the Uinta Basin; one showing the locations of known hydrocarbon deposits and the general surface geology of the Tertiary period, and the other showing locations of towns, streams, railroads and roads. A bibliography of 130 references and an appendix, giving well logs and a cost estimate for a 300-barrel plant, are also included.

Professor Ball in his section not only surveys the bitumen analyses and extraction methods resulting from past research, but adds the methods and results of research that he has conducted in the past several years. Two figures, showing a diagram of true-boiling-point apparatus and illustrating proposed processes for isolating constituents, and 26 tables add to the value of his work. A bibliography of 23 references is included.

This issue of the *Quarterly* comprises 115 pages and copies may be obtained from the Department of Publications of the Colorado School of Mines, Golden, Colorado, at $1.50 postpaid.

U. S. Field Operations

Illinois Basin

Second Producing Zone Discovered at Bungay

The discovery well which gave the Bungay pool of Hamilton County a new producing horizon was completed this week. It was National Associated Petroleum Company's York-Tibbs Community 2, SW NW NW 35-4s-7e, on the southeast edge of the pool. On initial pump test, the well made 20 barrels of oil in 24 hours from McClosky lime at 3428-42 feet after 3500 gallons of acid. Original production in the pool was from Aux Vases sand.

White County: Great Lakes Carbon Company has reconditioned Reiling 1-A, SW SE SE 21-6s-10e, an increased production from 39 barrels daily to 122 barrels. Originally producing from the McClosky lime, the well was perforated in the Tar Springs sand with 20 holes at 2774-84 feet, and the increased yield resulted.

Saline County: Ohio Oil Company's wildcat, Land 1, SE SW NW 33-10s-7e, on a communitized lease, is drilling below 900 feet. It is far removed from production.

Richland County: Probably the best completion in Illinois was Pure Oil Company's Van Blaracum 1, SW NE NE 30-3n-9e, nine miles southeast of Olney, which flowed 970 barrels of oil in 24 hours from McClosky lime at 2971-78 feet after 5000 gallons of acid.

Williamson County: Superior Oil Company has staked location for Pulley 1, SE NE NW 13-9s-3e, a wildcat six miles southeast of Marion, projected to McClosky expected near 2600 feet.

Jefferson County: Magnolia Petroleum Company's DeWitt 1, NW NW NW 16-2s-3e, two miles north of Mt. Vernon in wildcat territory, was abandoned at 2921 feet.

Clay County: Miller Drilling Company's Dunningan 1, W½ NW NW 14-3n-6e, a wildcat test northwest of Flora, is drilling below 2600 feet.

Indiana

Probably the most interesting well in Indiana is Continental Oil Company's test on the Amanda Myers lease adjacent to the Wabash river northeast of production in the Grayville area of Illinois.

The well is slated for a test of Devonian lime expected near 5000 feet. The drilling operator plans to whipstock and drill the well below the bed of the Wabash river.

B. M. Heath's Daudistel 1, SE NW 32-5s-13w, 6½ miles northeast of the Mt. Vernon pool in an area favorably regarded, was abandoned at 3049 feet in the St. Genevieve formation which was topped at 2858 feet. Major companies held considerable acreage in the area.

Kentucky

National Associated Petroleum Company is rigging rotary tools for two wildcat tests in Henderson County, Kentucky. One is Williams 1, 1-0-24, one and a half miles northwest of the old Niagra pool. The other test is Robertson 1 14-Q-24, two miles northeast of Henderson.

In outpost territory of the Pratt pool, Cherry & Kidd's Melton 3, 14-N-24, pumped 275 barrels of oil in 24 hours from Tar Springs sand at 1858-63 feet.

Ray Ryan and associates' Salmon 1, a wildcat test in 12-1-23 of Hopkins County, 10 miles southwest of Madisonville, is drilling below 1400 feet.

Oklahoma

Two Deep Wildcats In McClain County Testing

Although not hoping for much, operators await results of tests in the two deepest wells currently drilling in Oklahoma and which created considerable interest and a big lease play about a month ago.

The tests are Carter Oil Company's Cottingham 1, C SE SW 4-7n-3w, near the Washington community, and Johnson Ranch 1, C SW NE 13-8n-4w, near Blanchard, both in McClain County, which appeared to be possible pool openers earlier when oil shows were reported in the second Wilcox and Hunton sections.

Casing has been set in both wells; 5½-inch at 10,781 feet in Cottingham 1, for a test between 10,631-710 feet where oil stains were reported in the second Wilcox, and 5½-inch at 9666 feet in Johnson Ranch 1, for a Hunton lime test between 9500-26 feet where staining was reported in a 4-inch section of core. The Johnson Ranch well had been shut down for more than a week pending outcome of deeper drilling in the Cottingham test but apparently the company decided to make tests simultaneously and observers predict that while the Cottingham test has a chance as a small producer little hope of commercial production for the Johnson Ranch well is conceded.

Caddo County: Gulf Oil Corporation's Sherritt 4, NE SW NE 33-6n-10w, which earlier appeared to have outlined the west trend of the West Cement field after drilling through a dry section of the Medrano, looks like another oil well while drilling at 6101 feet and making oil heads about every 20 minutes. The company's Pell 1, NE SE SW 28-6n-10w, shut down earlier in the week, is drilling again at 5767 feet in lime and sand.

Carter County: The Texas Company extended production a quarter-mile southeast in the Tussy area as Pennington 1, NE NE NE 16-1s-3w, flowed 334 barrels of 27-gravity oil in the first 24 hours after perforating with 288 shots in a 40-foot section topped at 2736 feet in the upper Tussy sand. The Texas Company's Moore 1, SW NW NW 15-1s-3w, looked like an oil well in the upper Tussy, showing better than 700 feet of oil on drill-stem test at 2590-2607 feet.

Canadian County: A half-mile west extension to the important West Edmond pool gave Canadian County its second oil well as Herbert J. Schmitz's Specht 1, C SE NE 36-14n-5w, flowed 190 barrels of oil in two hours through tubing. Schmitz took over the operation from Sohio Oil Company, which had drilled to 7100 feet. Schmitz set pipe at 7070 feet and perforated at 7007-20 feet. Canadian County entered Oklahoma's oil producing counties column about a month ago with the completion of Dickey Oil Company's Young 1, C SE NE 25-14n-5w, which extended West Edmond a mile northwest.

Denver Producing & Refining Company was testing Holes 1, C SW NE 34-14n-4w, 1½ miles east of production in the Bartlesville sand through perforations at 6498-6522 feet and swabbed 7 barrels of fluid, mostly water with some oil. After acidizing the oil content increased and testing continues.

Cleveland County: After some delay two important wildcat tests are under way in the northwest part of the county. Kerlyn Oil et al's Loveless 1, NW NW NE 14-7n-1w, 3½ miles southeast of the Noble pool, set surface for a Wilcox sand test, and Mid-Continent Petroleum Corporation's Westmeier 1, NE SW SW 26-10n-3w, south of the Moore field, was drilling at 1800 feet, headed for Wilcox with the hole projected to 8800 feet.

Tests on six key wells in the West Edmond pool of Oklahoma and Canadian Counties, considered the most important 1943 discovery for Oklahoma, show bottom-hole pressure in the field at around 3000 pounds. Original pressure on the discovery well which was completed last May showed 3130 pounds bottom-hole pressure. There are 31 producers in the field which is being extended almost weekly and which now covers approximately five square miles. Wells are allowed to run 300 barrels per day. This is the first general survey of the field and tests are being made on 18 key wells.

Kansas

Oil Shows Being Tested In Three Counties

Phillips Petroleum Company and Ohio Oil Company, with eight active wildcats, took the spotlight this week in Kansas oil activities.

Two miles northeast of Moundridge in McPherson County, Allison et al were testing an oil show in Rupp 1, SW NE 13-21s-1w, in the Viola lime topped at 3419 feet.

Near the town of Kingman in Kingman County, ½-mile north of an old well drilled 15 years ago and which flowed for a couple of days, W. H. Gaddis has assembled a block in and around Section 10-27s-7w and plans a wildcat which is being supported by Phillips Petroleum Company.

Stafford County: Atlantic Refining Company is preparing to test perforations in Arbuckle in McCandless 1, SW SW SE 30-25s-13w. Five-inch pipe was set at 4303 feet and shows were reported in the Lansing and Simpson with top of the Arbuckle logged at 4289 feet.

Russell County: Good oil shows were reported in a test of Black-Marshall's Wolf 1, NE NE SW 34-13s-14w, in the Gorham sand at 3289-94 feet with indications that the wildcat will be a pool opener. The well is 2½ miles west of the Bunker Hill pool.

West Texas

Wheeler-Ellenburger Outpost Makes Good Flow

Mid-Continent Petroleum Corporation's Wheeler 1, ⅝-mile northeast of Wheeler-Ellenburger pool discovery, flowed 443 barrels of oil, averaging 4 to 6 percent rotary fluid, with gas-oil ratio of 1990/1, on a 6-hour test through open tubing from perforations at 10,670 to 10,710 feet. This outpost entered Ellenburger at 10,570 feet, 48 feet low, and logged oil saturation at 10,585 to 10,723 feet in drilling to 10,743 feet without making customary drill-stem test.

Stanolind Oil & Gas Company-Shell Oil Company's Wheeler 1-A, ½ mile west of their discovery, established the water level tentatively at 10,680 feet after showing for an oil producer in pay topped at 10,642 feet, and was drilling at 10,720 feet for geological information before running pipe to complete. In the event the water level stands it will be 4 feet higher on subsea depth than the discovery.

Keystone-Ellenburger: Sinclair Prairie Oil Company's Walton 4-A, ¾-mile west by north of the deep discovery for the field, flowed 1092 barrels of 43.8-gravity oil, gas-oil ratio 987/1, on 17-hour natural test through ½-inch choke from perforations at 9610-60 feet in Ellenburger, topped at 9163 feet, or 68 feet high. This outpost was drilled 519 feet into the Ellenburger without reaching water, and logged the usual gas-distillate zone in the upper Ellenburger. The company has skidded rig ¼-mile west. North and south offsets to the discovery are drilling into the Ellenburger pay. These wells require 8 to 9 months to complete. A separate pipe line system has been established to segregate this sweet oil to make it available to refineries that can not process regular grade of Permian Basin crude, and an upward adjustment of price posting is inevitable.

Stanolind Oil & Gas Company's Sealy-Smith 1, wildcat near the south line of Winkler County, flowed 365 barrels of 34-gravity oil and 18 barrels of water on 9-hour test through open tubing with gas-oil ratio of 1658/1 after using 3000 gallons of acid through Clear Fork perforations at 6170-6248 feet. Top of pay was logged at 6120 feet with elevation of 2778 feet.

Pecos County: The all-time depth record is about to be challenged by Phillips Petroleum Company's Price 1, 31 miles southeast of Fort Stockton, currently drilling Simpson shale at 14,555 feet. The company is using its rotary, and has been making exceptionally good progress since penetrating a difficult cherty-lime zone that retarded drilling to a single foot of hole per day.

Standard Oil Company of Texas' Mac-Der Company 1, 6½ miles south of the Owego 1 well pool, rated at 3,500,000 feet of gas daily, with 1875 pounds bottom-hole pressure, on drill-stem test after plugging back from granite at 5313 feet for completion through perforations opposite San Andres at 4706-20 feet. The Texas Company's Alexander 1, 2 miles northwest of the Apco-Warned deep area, had derrick for an Ellenburger test on acreage contributed by Globe Oil & Refining Company and Forest Development Corporation, who recently drilled a 6336-foot Ellenburger failure on their lease of 2560 acres.

Crane County: Magnolia Petroleum Company's Lea 10, south offset to the McKnight pay discovery in the northeast sector of the Sand Hills field, failed to kick off after perforating at 3125-40 feet, and was to use 250 gallons of mud acid. This well was plugged back from Clear Fork production at 4605 feet after recheck indicated that pay in the McKnight zone had been passed up as a gas sand. Two more Ellenburger wildcats have been authorized for the southeast portion of Crane County, where I. T. Dennis and James FitzGerald Jr., and The Texas Company are drilling on 2 tests, John I. Moore and associates will start Waddell Company 1, west corner of H&TC 19, Block 2, prior to May 1, and Magnolia Petroleum Company made location for Butler 1, southeast corner of H&TC 6, Block 1. Both are west of Gulf Oil Corporation's Dawson 1, an Ellenburger failure that showed a small amount free oil.

West Central Texas

Western Stephens Well Flows Oil from Ellenburger

First Ellenburger production in western Stephens County has been established by Phillips Petroleum Company's Wild 1, a southeast outpost for the Ibex area, with initial flow of 84 barrels of 44.5-gravity oil, gas-oil ratio of 811/1, on 3-hour gauge through 5/64-inch tubing choke. This new pay discovery drilled 13 feet into the Ellenburger to 4375 feet, and the zone was treated with 2000 gallons of acid.

Texas Pacific Coal & Oil Company's Brown 3-C, second deep producer for the Brownville pool, northern Stephens County, pumped 143 barrels of 43-gravity oil and 116 barrels of water, which has since been exhausted, on official test from Mississippian perforations at 4326-50 feet, having drilled to 4365 feet. The company will move the rig 5000 feet west to drill Douglas 1, Thomas Watson Survey. These Mississippian prospects are small in area but oil producers from this zone generally afford a high yield per acre.

Jones County: A shallow strike near the center of the east line of the county and 6200 feet northwest of nearest production was assured when John Byram and Cardinal Oil Company's Alexander 1, T&PRy 3, Block 14, filled 500 feet with 38-gravity oil after drilling Bluff Creek sand at 1647-55 feet with tools. Pipe has been lowered to 1624 feet for completion. Eason Oil Company and Jones & Stasney's Freeman 1, Henry Virm Survey, established a new pool in pumping 15 barrels of oil and 5 barrels of water initial after using 2500 gallons of acid in Gunsight at 2793-2815 feet, having plugged back from 2820 feet. Great Lakes Carbon Corporation's Hardy 1, north offset to its Hardy pool discovery, flowed 168 barrels initial on natural test through 3/16-inch from Canyon sand at 3705-08 feet.

Coleman County: Hunter & Hunter and Sohio Petroleum Company's Williams 1-B opened a prolific Strawn sand pool one mile south of Novice in flowing 110 barrels of 45.8-gravity oil on 3-hour natural test through ¾-inch choke from Gray sand at 3768-99 feet.

North Texas

Jack County Deep Strike Responds With Big Flow

Northern Ordnance, Inc.'s Lindsey 1, northeast offset to its 4300-foot Strawn sand discovery near the town of Woodbine, Cooke County, has opened 2 or more oil zones in the upper Strawn. Drill-stem test at 3613-20 feet yielded 720 feet of oil and 60 feet of oil-cut mud, while a second test at 3614-26 feet yielded 410 feet of oil and 90 feet of oil-cut mud. Drill-stem test of another sand at 3672-84 feet returned 385 feet of oil and 10 feet of oil-cut mud, while 50 feet of oil and 40 feet of salt water was recovered in using tester at 3754-69 feet. A substantial water sand was tapped in using tester at 3782-95 feet, resulting in the recovery of 150 feet of oil, 100 feet of oil-cut mud and 200 feet of water. Coring was resumed to explore the discovery pay before running pipe. The company has spudded Bell 1 and was ready to start drilling on Wilson 1, both close-in tests. This is the first important strike for the company in the district after an ambitious exploratory campaign.

Jack County: Shell Oil Company's Lester 1-A, recent strike on a seismograph high, centering 5 miles northwest of Jacksboro, flowed 218 barrels of 47-gravity oil natural on 2-hour test through ¾-inch after being closed in 5 days. Production is from porous lime at 5458-5512 feet in Mississippian, topped at 5444 feet, being 475 feet high to a 6084-foot Ellenburger failure 2-1/3 miles northeast. The well responded to acid treatment of 2000 gallons by flowing 506 barrels in 2½ hours through open tubing, then increased to 600 barrels in 1½ hours. Rig has been skidded one location north.

Clay County: Wilcox Oil & Gas Company and Continental Oil Company's Scaling 1, northeast corner of J. Gamble Survey and 3½ miles north of Watson pool, nearest production, was drilling at 5700 feet to fulfill depth contract after recovering 100 feet of oil and 250 feet of oil-cut mud when tester was used at 5566-87 feet in Bend, topped at 5355 feet. Pipe will be set on the strength of this showing. The Watson pool produces from the lower section of the Bend, and also from the Strawn on the flanks of the structure. The Wynn pool is off to a good start as a source of high-gravity production with Shell Oil Company's Harris 1, west offset to its discovery, flowing 316 barrels of oil in 2 hours through open tubing after flushing lime pay at 6220-99 feet with 200 gallons of acid. This well entered Mississippian at 6214 feet, 41 feet low. Sinclair Prairie Oil Company's Spikes 1, southeast offset to the discovery, drilled through the pay to 6402 feet, and was perforating to complete.

East Texas

Sand Flat Area Outpost Is High-Gravity Prospect

Sun Oil Company's Patterson 1, west outpost for the Sand Flat area, Smith County, revived prospects for high-gravity oil production from the Rodessa series by logging oil-saturated sand at 9335-72 feet in drilling to 9418 feet. Pipe

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was landed on bottom preparatory to perforating at 9350-67 feet. Electric survey placed massive anhydrite at 8863-9118 feet and first porosity in Rodessa at 9294-9310 feet with elevation of 509 feet. It is about 10 feet high on the Rodessa pay when correlated with Skelly Oil Company's Chisum 1, which flows 150 barrels of 29-gravity oil daily from Upper Paluxy at 6972-7025 feet after junking the lower portion of the hole while showing for small well in Rodessa at 9226-9306 feet.

Phillips Petroleum Company's McMinn 1, 6 miles south of Tyler, was coring unidentified formation at 9910 feet and possibly below the Rodessa series. The Texas Company's Nix 1, Starville prospect, was fishing at 5200 feet, and Bobby Manziel et al's Morrison 1, 3 miles northwest of Friendship, entered Goodland at 5295 feet and Paluxy at 5368 feet.

Wood County: Gulf Oil Corporation's Brewer 1, discovery for the Winnsboro geophysical prospect, flowed 5 barrels hourly, averaging from 2 to 5 percent acid residue with a negligible volume of gas from Rodessa perforations at 8263-88 feet, on open tubing test. The oil tests 40 gravity. Additional perforations will be made opposite a porous zone at 8001-09 feet, being immediately below the massive anhydrite. Shell Oil Company's Whatley 1, which has given the Manziel pool its first deep pay, flowed 40 barrels of fluid, averaging 6 percent bs&w, on 7½-hour test through open tubing after multi-acid treatment of Rodessa perforations at 8495-8525 feet. This well made its best production showing from Young pay perforations at 8455-85 feet.

Magnolia Petroleum Company's Lindley 1, Yantis prospect, drilling hard sand 8596 feet without shows.

Rogers Lacy et al's Republic 1, southwest edge of the Quitman field, abandoned at 6340 feet in Paluxy, topped at 6305 feet with elevation of 417 feet. Electric log indicated only one foot of Paluxy saturation.

Franklin County: Humble Oil & Refining Company's Hague 1, 5 miles southeast of Mount Vernon, entered Smackover lime at 11,239 feet with elevation of 343 feet, and was coring dry lime 11,265 feet.

Wildcats: Sinclair Prairie Oil Company's Markey 1, Rusk County, was drilling shale 6758 feet and near a decisive level in Travis Peak. In Limestone County, Zephyr Oil Company's Nussbaum-Scharff 1, 3 miles west of Groesbeck, tested salt water at 5515 feet with 5½-inch at 5490 feet in Pettit, topped at 5415 feet. Swabbing test that followed casing perforations at 5416-36 feet yielded a small show of oil and gas, and the balance of zone will be tapped.

Oil Movie Premier at Compact's Spring Meet

"Oil for Tomorrow," the Interstate Oil Compact Commission's educational film, will have its premiere before industry leaders and public officials at the compact's quarterly meeting April 3-4 in the Roosevelt Hotel, New Orleans. The thirty-minute movie, in sound and color, tells the story of progress in oil and gas conservation.

Gas-cycling operations will be the theme of a paper by R. L. Keyes of New Orleans, assistant division manager of The Texas Company.

Southwest Texas

Discovery Near Nordheim Completes Potential

Sohio Petroleum Company has completed potential on its discovery 4 miles east of Nordheim and 3½ miles southwest of Yorktown in DeWitt County. First National Bank 1 flowed 36 barrels daily through ¼-inch choke from perforations at 7085-90 feet in the Carrizo-Wilcox sand. Tubing pressure mounted to 600 pounds, casing 875 pounds. With the Wilcox topped at 7070 feet, the wildcat previously showed for gas-distillate production at 7180-83 feet after acidizing. The hole is bottomed at 8504 feet, casing set to 7248 feet.

Discovery: The Texas Company is making completion test on Yaeger 2, wildcat 3 miles northwest of Yaeger field and 5 miles west of Hebbronville in the northwest corner of Jim Hogg County. Casing was set after oil and salt water were recovered on a drill-stem test at 3315-20 feet. The hole is bottomed at 3373 feet where electrical survey was run. This discovery is in BS&F 163.

New Pay: Sam E. Wilson is opening a new gas-distillate pay 1 mile northeast of production in the Wilson field area, at Minten Estate 1, which flowed gas and distillate from perforations at 7292-97 feet, tubing pressure mounting to 2900 pounds. The field discovery, Garza 1-A, was completed in April, 1943, as a gas-distillate producer in perforations at 7920-27 feet, while the new well is bottomed at 7874 feet with 5½-inch casing set on bottom.

Extension: Magnolia Petroleum Company is testing Armstrong 1, 4700-foot southwest extension to the Armstrong field in Jim Hogg County, after logging gas sand in a new level at 3594-3605 feet. A drill-stem test at this level built working pressure up to 1000 pounds. Location is in the northeast corner of AB&M 96.

San Patricio County: Humble Oil & Refining Company has completed potential on Green 1, discovery of the Gregory field in the southeast portion of county, for 250 barrels of 45.7-gravity oil daily through ¼-inch choke, 2310 pounds tubing pressure, casing sealed. Perforations were made at 9120-40 feet. The hole is bottomed at 10,010 feet with 5½-inch casing set to 9458 feet. Location is 1980 feet from south and east lines of T. T. Williamson survey, 2 miles southeast of Gregory on a 4529-acre lease. The company has spotted Green Estate 2 as a northeast outpost.

Completion: The Texas Company has completed Tijerina 2, Andres Canales Survey 279, as the discovery of a new field 1½ miles southeast of Seeligson field in Jim Wells County. The well flowed 257 barrels of 39.2-gravity oil daily from perforations at 7117-25 feet in sand topped at 7107 feet with bottom of hole at 7128 feet. The flow was through ⅛-inch choke with 1875 pounds pressure on tubing, casing sealed.

Starr County: A major extension or a new oil field is in the making 2 miles northeast of Garcia field. On drill-stem test at 3763-69 feet, Sun Oil Company's Solis 1, recovered 9 stands of 44.6-gravity oil in 15 minutes through ¼-inch and ⅜-inch chokes. The sand was found at same level from which Garcia field produces. Location is in southeast corner of a 112-acre lease, tract 30, portion 95, Jurisdiction of Camargo.

Goliad County: Continental Oil Company is making a series of flow tests on Heard 1, rework job of Sun Oil Company's dry hole in Robert Walker survey, 10 miles north of Goliad. The hole has been cleaned out to 9003 feet and casing set to perforate for production tests.

Texas Gulf Coast

Colorado County Discovery Being Dually-Completed

Jack W. Frazier and Cities Service Oil Company are dually completing their Wilcox sand discovery, Gay 1, 3 miles northwest of Columbus in Colorado County. On last gauge it flowed at daily rate of 47 barrels of 44-gravity oil and 508,000 feet of gas through ⅛-inch choke and perforations at 7667-70 feet. Pipe is being perforated at 7302-08 feet and 7310-14 feet. All these levels showed oil and gas and gas-distillate on drill-stem tests. Total depth is 8037 feet with 5½-inch casing cemented on bottom.

Discovery: Sun Oil Company has completed Daughorty-Pool 1, F. Valmore Survey, field discovery 3½ miles north of Winnie, Chambers County, flowing 178 barrels of fluid, 112 barrels being oil and 66 barrels salt water, from perforations at 8752-55 feet. The flow was through 10/64-inch choke, tubing pressure mounting to 1800 pounds. Depth is 9519 feet with 5½-inch casing set on bottom.

Wildcats: Drilling of new tests is showing a slight gain on the coast. W. Stewart Boyle has announced he will drill Swenson 1, on a 43-acre tract in James Devers survey, 2 miles northwest of Wharton in Wharton County. It is scheduled to drill to 6000 feet.

Humble Oil & Refining Company has staked a 8000-foot wildcat in the New Delhi area of western Harris County. It is Hickman 1 and is located on a 159-acre lease in H&TC 81, 3½ miles east of Katy. Drilling is to start at once.

Matagorda County: Sun Oil Company has completed a major west extension to North Bay City field with Braman 1-B in H. H. League flowing 321 barrels of 35.1-gravity oil daily from perforations at 7877-81 feet. Tubing pressure mounted to 1025 pounds, casing sealed. Depth is 8800 feet.

Ohio Oil Company is preparing to drill McDonald 1, outpost north of North Bay City field, on a 150-acre lease in the north part of Jacob Betts League. Projected depth is 9000 feet.

Hardin County: Shell Oil Company has announced it will drill Kirby 1, wildcat 4 miles west of Saratoga, on a 2102-acre lease in Hardin County School Land survey. It is projected to 8000 feet.

Extension: Sun Oil Company has spotted location for Federal Land Bank 2, T&NO 81, on the north edge of Fig Ridge field, Chambers County.

On southeast side of the field, C. M. and V. W. Frost have completed Fee 5 in HT&B 95. Perforations were made at 8496-8520 feet and flow was 259 barrels daily through 5/32-inch choke. Depth is 8571 feet with 5½-inch casing set on bottom.

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LUZERNE M. TIDD has resumed his post as secretary-treasurer of Black, Sivalls & Bryson at Oklahoma City, after a year as major in the U. S. Army.

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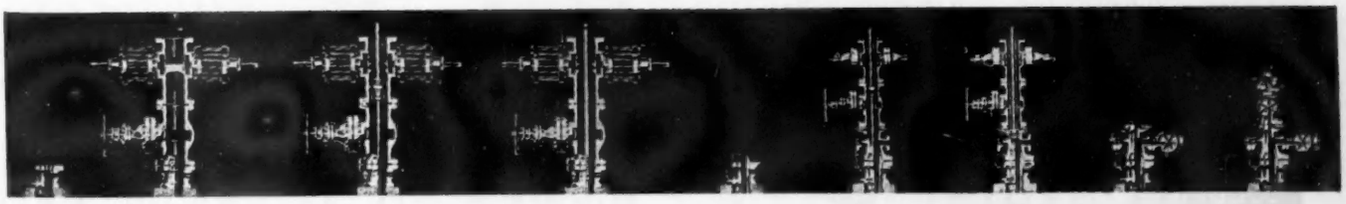

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South Louisiana

New Producing Horizon For St. Mary Parish

Union Oil Company is completing its gas-condensate discovery in the Gordon area, Beauregard Parish, having erected tanks and separator for Edgewood 1, Section 25-6s-10w. Last test was made in perforations at 6767-70 feet, and the flow was condensate and some gas through ⅛-inch choke, tubing pressure mounting at 2350 pounds. The hole is bottomed at 6900 feet with 5½-inch casing cemented at 6818 feet.

St. Mary Parish: Fifteen Oil Company has completed a producer on the south flank of Charenton in what is called by some operators as a new producing horizon. South Coast Corporation 5, Section 24-13s-10e, was perforated at 6822-28 feet and the flow was 203 barrels of 38.5-gravity oil daily through 9/64-inch choke, tubing pressure 1500 pounds, casing sealed. The hole is bottomed at 7280 feet with 7-inch set to 6948 feet.

Acadia Parish: Union Sulphur Company is drilling at 5900 feet in sidetracked hole at Daigle 1, Section 49-7s-2e, wildcat in Church Point area. The well blew out at 9817 feet and stuck drill pipe, was plugged back and sidetracked after a long fishing detail.

Terrebonne Parish: Sun Oil Company is completing its first well in the East Gibson area with Jackson Unit 1, Section 26-17s-15e, after perforating and squeezing at 5850-53 feet. The hole is bottomed at 9751 feet in shale and 7-inch casing is set to 8636 feet.

Discovery: Continental Oil Company and Union Sulphur Company are making new test in Shoesmith 1, wildcat discovery in Section 1-8s-14, China area. The hole is bottomed at 10,092 feet with 5-inch liner set to 9564 feet. Gas and distillate shows were found at 8755-64 feet, 9175-9200 feet and a sand showing a small amount of oil at 9495 feet.

Vermilion Parish: Phillips Petroleum Company has staked Weisner 1, SW 28-13s-14e, in Erath area where shallow production was opened recently. The discovery well was Adelaide 1 and flowed 240 barrels daily from perforations at 7380-83 feet.

Evangeline Parish: One of the most important developments in the Pine Prairie field is completion of an extension to open Wilcox production on the east flank of the dome. Gulf Refining Company's Schlicher-Thomas 2, Section 37-3s-1w, flowed 270 barrels daily through 3/16-inch choke, tubing pressure 1000 pounds, from perforations at 9950-70 feet. Total depth is 11,000 feet with 5½-inch casing set to 10,342 feet. Wilcox was topped at 9825 feet.

Argentina Expects 1944 Oil Gain of 10 Percent

Production of petroleum in Argentina in 1944 will total about 16,667,000 barrels, an increase of 10 percent over 1943 output, it has been estimated by the general manager of Yacimientos Petroliferos Fiscales, oil producing department of the Argentine government.

Mississippi

Increased Drilling Planned For Eucutta and Heidelberg

Greatly increased drilling activities are planned for two Mississippi fields, Eucutta in Wayne County and Heidelberg in Jasper County.

Several wildcats are nearing decisions, with Gulf Oil Corporation testing Lewis Morgan 1, 30-1n-13e. Sun Oil Company's well in Section 31-1n-13e is still drilling at 3325 feet and giving indications of another good producer for Heidelberg field.

Arkansas

Petroleum Spotlight on Union-Columbia Areas

Union and Columbia Counties are vying for the petroleum development spotlight with chief interest in several outside tests and wildcats getting under way. Failures threatened to offset new producers, when two important wildcat operations were included among the wells abandoned as dry holes.

Columbia County: Frankel & Frankel failed to obtain production in Ulma Edwards 1, C SE SW 16-17-21, which was abandoned at 8168 feet. Phillips Petroleum Company completed McWilliams-Willis (Suckle) 1, 18-18-21, at 9053 feet. The well is making 62 barrels daily from sandstone oil at 7939 feet, and 18 barrels a day from sandstone gas at 8946 feet. Grady Vaughn brought in the other

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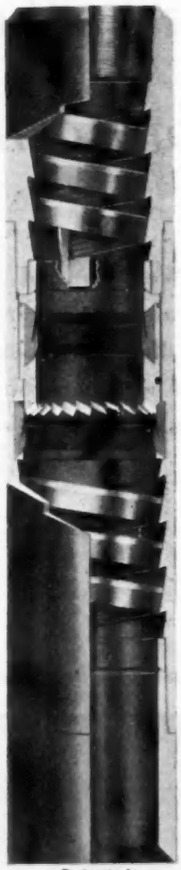

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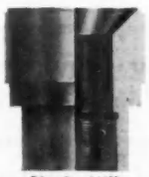

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4A-4

Dorcheat - Macedonia producer, Snider-Jameson 1, 20-18-21, good for 143 barrels per day.

Union County: Two gas wells were completed in the Rainbow City field, but both are closed in awaiting connections. They are Curtis Kinard's A. C. Gaddy Estate 1, 14-17-14, and P. W. Gaddy 1, 12-17-14.

A second disappointment in the effort to obtain deep lime production in the old Smackover field followed when B. H. Murphy and J. E. Head abandoned J. T. Murphy 1, 8-16-15, Norphlet area, at 5595 feet. It is understood that the well may be turned over to other operators who may seek shallow production. Last week Phillips Petroleum Company abandoned Betty Joyce 23, also a wildcat deep-lime test, 33-15-15, Ouachita County, near Louann, at 5050 feet.

Michigan

Test Further Discounts Deep River Prospects

First blow to development plans in the new Deep River field, Arenac County, opened in January, appeared in the making with Ervin Major's Klein 1, S½ SW SE 5-19n-4e, two locations east and one north of the discovery, missing an oil pay in the discovery producing section. Klein 1 topped Dundee at 2704 feet to place it 15 feet higher structurally than the pool opener but it showed nothing to 2866-70 feet where a light show of oil and water was logged. It was shut down for orders. The discovery produced in the top of the zone.

Clare County: Leonard and Rowmor's Miltner 1, S½ SW SE 1-20n-6w, Winterfield Township, has been cased at 5050 feet with 5-inch for a production test on the Richfield, first test in that area to that horizon. It was originally completed in 1943 for a Dundee discovery well at 3840 feet.

Missaukee County: Sun Oil Company will set pump-jack on Miller 1, S½ NW NE 13-23n-5w, with swab recovery running from 10 to 16 barrels of oil showing some water. Well is producing from Richfield at 4625 feet and is three quarters of a mile southeast of the field discovery.

California

New Midway Pays Encourage Hopes

The uncovering of several new pays in the old Midway field, Kern County, has raised high hopes for the opening of new production of major importance.

At depths between 4250 and 4500 feet, only a few hundred feet below the Pliocene sand long productive on the west side of Buena Vista, two exceptionally rich horizons have been discovered. The first completion from the lower of the two is a flowing well good for 1000 barrels or more daily of about 30 gravity clean oil. Drill-stem tests in another well 1½ miles northwest now being readied for completion indicate even better potentials.

These developments have attracted widespread interest, and there are indications the finds will touch off extensive new exploration as well as a lot of development on holdings adjacent to the discoveries.

Although Standard Oil Company, because of large scattered acreage, likely would be chief beneficiary of ultimate proving up of a wide expanse of new production, several others have well-located properties, notably North American Oil Consolidated, Tide Water Associated Oil Company, Union Oil Company, Richfield Oil Corporation and Honolulu Oil Corporation.

Imperial County: Second of the group of prospective wildcats scheduled for participation in the huge Salton Sea wildcat campaign inaugurated by Pure Oil Company, a location has been announced by Standard Oil Company for a try 7 miles north of Pure Oil Company's test, in 26-10-9. Pure Oil Company's well, in the center of a 12,800-acre block, is plotted for an examination of all formations above basement, probably to go to 13,000 feet.

Los Angeles County: Three Los Angeles Basin wildcats, each of which had given promise of opening a new pool, have met with discouraging circumstances upon reaching various stages of completion. The Roosa well that probably has established a new pool for Aliso Canyon area would not flow and is being rigged for pumping test. Similar difficulties were experienced in the test of Pauley Bros.' El Segundo area wildcat, with some doubt as to whether it can be made a commercial producer.

Ventura County: Believed to be the deepest hole ever drilled with a "spark plug" outfit, Standard Oil Company's Fillmore area wildcat is making hole only a few hundred feet above the 13,000-foot level.

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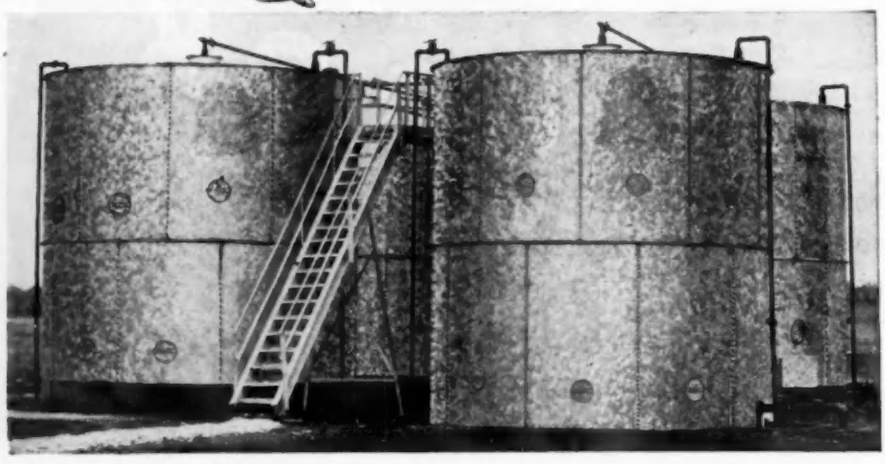

United States Well Completions

ARKANSAS

Miller County—Foulke: Carter Oil Co.'s T. W. Hunter 1, c nw sw sw 32-16s-26w, pay 3574 ft, perf 15 shots 3574-77 ft, flow 119 bbls, 9/64-in, td 3659 ft.

Ouachita County — Smackover: Phillips' Betty Joyce 23, 706 w 520 s of ne cor ne ne 33-15s-15w, deep test in lime, abnd 5050 ft.

Union County—Urbana: Lion's Powledge 1, 20-18s-17w, east of Schuler field on edge of Urbana, perf 7120-26 ft, flow 130 bbls oil, 30 bbls sw, 1-in, td 7415 ft.

CALIFORNIA

Fresno County—Coalinga: Shell's 147-26 se ne sw 26-19-15, pump 100 bbls oil, 100 wtr, perf 2804-2709, 2608-2648 ft, td 2815 ft.

Texas Co.'s A-6, sw nw ne 6-20-15, pump all circulated oil, 50 ft perf 1280 ft, td 1285 ft.

W. M. & M. Oil Co.'s 6, ne nw nw 32-19-15, pump 65 bbls 18.8-gr, 80 ft perf 2115 ft, td 2115 ft.

Fresno County—Helm: Amerada's Wheatville Ranch F-42-8, c se ne 8-17-18, flow no est, perf 8000-15, 7990-8000 ft, sand 7990 ft, td 8135 ft.

Fresno County—Raisin City: Signal Oil & Gas Co.'s 73-14, nw se ne 14-15-17, flow est 1000 bbls 23.2-gr, ½-in, perf 6306-19 ft, td 6338 ft.

Amerada's Larrey 87-15, ne se se 15-17-19, flow 621 bbls 37.9-gr, 552,000 gas, 16/64-in, 920/0 lbs, 67 ft perf 7910 ft, Eocene 7843 ft, td 7910 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 13A-34, ne se ne 34-28-21, pump 3 bbls oil, 43 wtr, 382 ft perf 800 ft, td 800 ft.

Belridge Oil Co.'s 14-34, sw sw nw 34-28-21, pump 25 bbls 16.1-gr oil, 6 wtr, 424 ft perf 800 ft, td 800 ft.

Belridge Oil Co.'s 14A-34, sw sw nw 34-28-21, pump 25 bbls 16.3-gr, 5 wtr, 246 ft perf 725 ft, td 725 ft.

Belridge Oil Co.'s 22A-34, se nw nw 34-28-21, pump 35 bbls 15.8-gr oil, 9 wtr, 556 ft perf 1050 ft, td 1050 ft.

Chanslor Canfield Midway Oil Co.'s B. F. 11-19, sw nw sw 11-29-21, pump 26 bbls 14-gr oil, 3 wtr, perf 1120-25, 1130-35, 1153-58, 1168-78, 1235-60 ft, td 1390 ft.

General Pet. Corp.'s 8-1, se nw sw 1-29-21, pump 25 bbls 17.2-gr oil, 6 wtr, perf 1019-50, 999-953 ft, td 1085 ft.

General Pet. Corp.'s 9-1, se nw sw 1-29-21, pump 14 bbls oil, 36 wtr, perf 878-939, 975-1030 ft, td 1037 ft.

Kern County—Buena Vista: Honolulu's 6, sw sw sw 2-32-24, pump 24 bbls 26.2-gr, 75 ft perf 2995 ft, 2nd oil sand 2965 ft, td 2997 ft.

Kern County—McKittrick: (OWDD) Standard's Davis 25, 13-30-21, pump 70 bbls, 301 ft perf 1100 ft, otd 998 ft, dr to 1100 ft.

Kern County—Midway-Sunset: Murvale Oil Co.'s 58-20, sw sw se 20-32-24, flow 285 bbls 24.8-gr, 18/64-in, 220/0 lbs, 96 ft perf 3411 ft, Scalez 2810 ft, Gusher 3072 ft, Calitroleum 3322 ft, td 3413 ft.

Quality Oil Co.'s Buick 2, se se ne 32-31-23, pump 60 bbls, 35 ft perf 3279 ft, Calitroleum 3542 ft, td 4255 ft.

Richfield's Fairfield 224, nw se se 11-31-22, pump 50 bbls 19-gr, perf 1540-1619 ft, td 2850 ft, pb 1620 ft.

Kern County—Paloma: Western Gulf's Paloma Unit 34-12, sw se nw 12-32-26, flow 600 bbls 42-gr, 612,000 gas, 14/64-in, 2500/3350 lbs, perf 10,990-980, 10,855-695, 10,670-540 ft, td 11,041 ft.

Kern County—Poso Creek: Standard's 5-33, sw nw se 5-28-27, pump 16 bbls 14-gr oil, 4 wtr, 74 ft perf 2759 ft, td 2805 ft, pb 2764 ft.

Kern County—Rio Bravo: Superior's Pasadena Realty 8, ne ne se 33-28-25, flow 1992 bbls 41.1-gr, 1,759,000 gas, 40/64-in, 640/0 lbs, perf 11,410-455 ft, Rio Bravo 11,407 ft, Vedder 11,460 ft, td 11,470 ft.

Los Angeles County — Rosecrans - Athens: (OWDD) Union's Rosecrans 18, 240 ft s 472 ft e c/l Broadway and Rosecrans, gas lift 166 bbls oil, 34 wtr, 563 ft perf 8460 ft, otd 7630 ft, dr to 8470 ft.

Los Angeles County—Torrance: Texas Co.'s R. I. 10, 572 ft sly on City of Torrance bndry fr c/l Beryl St. 330 ft ely at r/a, pump 35 bbls oil, 7 wtr, 344 ft perf 3605 ft, td 3605 ft.

Los Angeles County—Wilmington: Cleveland Oil Co.'s Bayview 1, 246 ft s 130 ft w c/l Sandison and Bayview, pump 172 bbls oil, 42 wtr, perf 3083-3309, 3507-3714 ft, td 3715 ft.

Long Beach Oil Dev. Co.'s "W" 63, 923 ft nely on n/l Seaside fr e side 27th Ave th 300 ft sely at r/a, flow 333 bbls 18.6-gr, 24/64-in, 160/490 lbs, perf 2319-2498, 2545-2641 ft, td 2646 ft.

Memco Oil Co.'s 1, (OWDD) 433 ft s 158 ft e c/l "M" and Marine, pump no est, perfs 3013-3145, 3185-3271, 3479-3271, 3479-3574, 3659-99 ft, otd 3696 ft, dr to 3701 ft.

Orange County—Huntington Beach: Southwest Expl. Co.'s State J-14, 2488 ft wly fr c/l 23rd 125 ft nly at r/a, flow 150 bbls, 16/64-in, 25/255 lbs, perf 3205-2507, 2353-2243 ft, td 3207 ft.

Standard's B-75, 1110 ft nwly alg Ocean Ave fr c/l 23rd th 250 ft nely at r/a, pump 215 bbls 14.5-gr oil, 32 wtr, 280 ft perf 3116 ft, td 3250 ft, pb 3120 ft.

Holly Oil's 11, se se sw 35-5-11, pump 55 bbls 18-gr, 30 ft perf 3692 ft, td 3702 ft.

Santa Barbara County—Gato Ridge: Barnsdall's Tognazzini 16, se nw nw 15-8-32, pump 314 bbls 13.6-gr oil, 80 wtr, Miocene 1670 ft, td 3376 ft.

Santa Barbara County—Santa Maria Valley: Bel-Air Oil Co.'s Donovan 2, 3467 ft nly 330 ft ely swc lot 102, Rancho Guadalupe, pump 200 bbls oil, 200 wtr, 509 ft perf 4829 ft, td 4838 ft.

Brain & Kohler's Rembusch 3, sw ne ne 35-10-34, pump 75 bbls 12.5-gr oil, 6 wtr, 550 ft perf 5530 ft, td 5535 ft.

W. R. Gerard's Acquistapace 2, se sw sw 22-10-34, flow est 2000 bbls, 725 ft perf on bottom, td 4805 ft.

J. E. O'Donnell's Madeline 1, 330 ft n 990 ft w nec Russell ppty, 21-10-34, pump 150 bbls 16.5-gr, td 4111 ft.

Ventura County — Rincon: General Pet. Corp.'s Ferguson 18, 1672 ft swly on wly 1 Permit 48 fr nly cor th 162 ft sely at r/a, flow 70 bbls 31.2-gr, 12/64-in, 70/0 lbs, 76 ft perf 2367 ft, td 2368 ft.

Honolulu's Whitten Permit 56-7, 2280 ft sly 350 ft wly fr nec Permit 56, 7-3-24, flow est 150 bbls, perf 2880-50 ft, td 3325 ft, pb 2902 ft.

Ventura County — Ventura Avenue: Shell's Taylor 170, 2870 ft s 8600 ft w R. C. L. Cor. 11, gas lift, no est, perf 5804-47, 5527-5776 ft, td 5850 ft.

CALIFORNIA WILDCATS

Glenn County—Discovery: Superior's Grant Capay Comm. 1-2, 1878 ft n 660 ft w nec Glenn Rnch sur, 13-21-2, Ord Bend area, flow 4,550,000 dry gas, perf 3670-80 ft, gas sand 3670-3682 ft, Southeast exten of Ord Bend discovery, td 3740 ft.

Sacramento County—Discovery: Amerada's McGillivray Comm. 1, ne se se 29-5-5, Lodi area, flow est 5,660,000 dry gas, perf 3335-3355 ft, td 3500 ft, pb 3385 ft.

Tehama County — Failure: General Pet. Corp.-Union Oil Co.'s Dolan 1, c sw ne 33-23-3, Orland area, abnd 2873 ft.

Tulare County—Failures: Amerada's Dinuba Comm. 21-1, sw sw ne 21-16-24, Kingsburg area, granite, abnd 518 ft.

Amerada's Dinuba Comm. 28-1, se nw ne 28-16-24, Kingsburg area, granite, abnd 907 ft.

KANSAS

Barton County—Kraft-Prusa: Gulf's Joseph 4, ne ne sw 29-16s-11w, Arb 3337 ft, 2000 gals acid, 672 bbls, 3347 ft.

Barton County—W. Ainsworth: Continental's F. J. Schreiber 4, nw nw se 32-16s-13w, Arb 3357 ft, abnd 3590 ft.

Barton County—Bahr: Shirley Clum's J. S. Bahr 1, sw sw ne 26-18s-15w, Reagan 3446 ft, abnd 3494 ft.

Butler County—Eldorado: Adair-Morton & Phil-Han's Robbinson 5, sw ne se 18-25s-5e, Miss 2570 ft, 300 bbls, 2590 ft.

Butler County—Brandt-Sensenbaugh: Adair-Morton et al's Sawyer-Farmer B-1, se se nw 2-28s-7e, Miss 2742 ft, shot 15 qts, 4000 gals, 2788 ft.

Cowley County—Dunne: Ben Grallop & McNeish's Metz 1, nw ne sw 27-34s-5e, Miss 3000 ft, abnd 3014 ft.

Dickinson County — Lost Springs: R. E. Youker's Dastwilder 1, sw sw se 23-16s-4e, Miss 2282 ft, abnd 2354 ft.

Ellsworth County—Stoltenberg: Don Ingling & Alpine's Buehler 1, ne se ne 18-16s-10w, Arb 3381 ft, 1500 gals acid, 100 bbls, 3388 ft.

Finney County—Nunn: Atlantic's Davis 1, cen sw nw 26-21s-34w, Miss 4603 ft, 252 bbls, 4733 ft.

Graham County—Morel: Gulf's Hinman 4, nw sw se 23-9s-21w, Arb 3899 ft, abnd 3915 ft.

Kiowa County: Texas' W. C. Mitchell 1, nw ne ne 2-27s-18w, Kinderhook 4648 ft, Viola 4741 ft, Arb 5022 ft, abnd 5058 ft.

Marion County—Lost Springs: R. E. Youker's McNickle 5, se sw nw 3-17s-4e, Miss chat 2317 ft, 135 bbls, 2359 ft.

McPherson County—Lindsborg: Bay Petroleum's Carson 1, se nw nw 7-17s-3w, Viola 3414-15 ft, 277 bbls, 3419½ ft.

M. & L. Oil's E. J. Bengstrom 1, nw ne ne 13-17s-4w, Viola 3427 ft, 139 bbls oil, 25 bbls wtr, 3435 ft.

McPherson County—Johnson: Shell's Johnson 7, se nw nw 2-20s-3w, Miss chat 2955 ft, 121 bbls oil, 50 bbls wtr, 3024 ft.

Rush County—Otis-Albert: Flynn's Crowell 4, cen s½ se ne 23-18s-16w, Cam 3507 ft, 750,000 gas, 3537 ft.

Russell County—Fairport: T. C. Johnson's R. Hohlman 8, c w½ se nw 5-12s-15w, Sooy 3062 ft, 100 bbls, 3088 ft.

Russell County — Williamson: Consumers Coop. Refg. Assoc.'s Williamson 1, sw ne nw 9-14s-14w, Lansing 3026 ft, abnd 3133½ ft.

Russell County—Big Creek: Benson & Fred. U. T. Smith's Neidenthal 2, ne se ne 23-14s-15w, Arb 3204 ft, 686 bbls, 3212 ft.

Russell County—Trapp: Pryor & Lockhart's Kiel 1, sw se sw 18-15s-13w, Arb 3288, 171 bbls oil, 90 bbls wtr, 3295 ft.

Stafford County—Hazel: Phillip's Krone 2, c nw sw 22-21s-13w, Arb 3676 ft, shot 10 qts, 3751 ft.

Wells Completed in the United States in Week Ended March 18, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama												1	1	
Arizona													1	
Arkansas	2			1	3						3	5	35	46
California	34				34	3		2	3	5	42	32	396	258
Colorado												3	8	5
Georgia														1
Illinois												30	308	400
Indiana												8	75	63
Iowa														2
Kansas	15	1		7	23		2		8	10	33	40	409	314
Kentucky												10	98	60
Louisiana	10			3	13		2		5	7	20	8	137	117
North Louisiana							1		4	5	5	6	42	47
South Louisiana	10			3	13		1		1	2	15	2	95	70
Michigan												12	121	90
Mississippi													22	15
Missouri													6	2
Montana												8	55	38
Nebraska													7	15
New Mexico	6	1		2	9	1					10	11	97	55
New York	15		10	1	26						26	25	274	254
Ohio	2	4		4	10						10	11	166	189
Oklahoma	18	3		4	25			1	6	7	32	13	326	293
Pennsylvania	29	5	16	1	51						51	51	604	523
Tennessee													3	1
Texas	47	1	3	9	60	3	2		18	20	83	122	1,111	813
E.Tex.Bor. Co.'s													4	5
E. Texas Field													1	2
East of E. Texas	4			1	5		1		3	4	9	5	62	44
North Texas	11		3	4	18	1			6	6	25	39	258	189
W. Central Tex.	1				1	1			2	2	4	11	80	63
West Texas	22			1	23	1	1		2	3	27	29	303	183
Tex. Panhandle	3	1		2	6						6	5	41	60
G. Coast, Upper									2	2	2	11	94	55
G. Coast, Lower	4				4						4	12	175	115
Southwest Texas	1			1	2				2	2	4	9	76	80
S. Central Texas	1				1				1	1	2	1	17	17
West Virginia	1	11		1	13						13	15	209	132
Wyoming												8	32	30
Total U.S.	179	26	29	33	267	7	6	3	40	49	323	413	4,501	3,716

* Includes distillate wells. † Includes salt water disposal wells.

Stafford County—Zenith: Transwestern's O. Volker 1, c se ne 36-23s-11w, Viola 3677 ft, pay 3702 ft, 43 bbls.

Plains Exploration's Figger 1, c e½ se ne 8-24s-11w, Viola 3776-78 ft, 2385 bbls oil, 152 bbls wtr, 3778 ft.

KANSAS WILDCATS

Cowley County—Failure: Appleman's Wilson 1, swc 9-32s-3e, arb 3498 ft., abnd 3523 ft.

Ellis County — Failures: Nelson Drlg.'s Fischer 1, se se nw 9-11s-20w, Simp 3620 ft, Arb 3638 ft, abnd 3689 ft.

Darby et al's Kansas Frontier State Park 1, nwc se 5-14s-18w, Arb 3711 ft, abnd 3745 ft.

Ellsworth County—Failure: Colorado Pet.'s Boldt 1, nw se ne 20-18s-9w, Arb 3263 ft, abnd 3290 ft.

Greenwood County—Failure: Pepper et al's Maus 1, se nw 2-27s-9e, abnd 60 ft.

Kiowa County—Failure: Texas Co.'s Mitchell 1, nw ne ne 2-27s-18w, Arb 5022 ft, abnd 5058 ft.

McPherson County — Failure: Prichard's Bishop 1, 21-18s-1w, abnd 2801 ft.

Russell County—Discovery: Nadel & Gussman's Janne 1, c w sw nw 24-15s-12w, Arb 3308-3310 ft, perf 36 shots 3088-3106 ft, 3050 gals acid pump & flow 3432 bbls, td 3330 ft.

Russell County—Failure: Frontier Fuel's Short 1, sw ne nw 31-14s-11w, Base K.C. 3082 ft, Arb 3158 ft, abnd 3185 ft.

Trego County—Discovery: Huber et al's Cotton 1, c w ne ne 26-12s-21w, perf 11 shots 3323½-25 ft, pump & flow 242 bbls, td 3364 ft.

NORTH LOUISIANA WILDCATS

Tensas Parish—Failure: Placid Oil Co.'s Ayer 1, 18-14n-11e, abnd 9770 ft.

Lincoln Parish—Failure: Arkansas Louisiana Gas Co.'s Liner 1, ne ne se 31-19n-3w, abnd 6200 ft.

NORTH LOUISIANA OUTPOSTS

Tensas Parish—Failure: Arkansas Fuel Oil Co.'s Gibson 1, 7-11n-10e, Wilcox test, abnd 3053 ft.

Tensas Parish—N. Lake St. John Extension: California Co.'s Brown 1, 46-9n-10e, flow 311 bbls, Tuscaloosa perf 9067-80 ft, td 9129 ft.

Webster Parish—Shangaloo Failure: Navarro Oil Co.'s Sexton 1, 2300 n 2314 w of se cor 32-23n-9w, abnd 3010 ft.

SOUTH LOUISIANA

Ascension Parish — Sorrento: Texas Co.'s United Lands Co. 1, 392 s 332 w of ne cor nw 14-10s-4e, abnd 6662 ft.

Calcasieu Parish—Vinton: Houston Oil Field Materials Co.'s Vincent Heirs 1, 1843.6 e 330 n of sw cor 34-10s-12w, perf 3180-3206 ft, pump 63 bbls, td 5777 ft.

Calcasieu Parish — Sulphur Mines: Union Sulphur Co.'s B. Ulrich 7, 2400 n 337 w of se cor 19-9s-10w, abnd 7455 ft.

Cameron Parish—Gum Cove: Magnolia's R. A. Moore 2, 330 n&w of se cor nw¼ se¼ 13-12s-12w, 1650 n&w of se cor sec 13, perf 9142-47 ft, pump 85 bbls cond 53.3-gr, 1,266,000 gas, 16/64-in, td 10,074 ft.

Evangeline Parish — Pine Prairie: Gulf's Schlicher-Thomas Co. 2, 325.9 e 330 s of nw cor sw¼ ne¼ 37-3s-1w, sand 9950-74 ft, perf 9950-70 ft, pump 270 bbls, 3/16-in, td 11,000 ft.

Gulf's Schlicher-Thomas A-7, 1675.8 s 330 w of ne cor 3-4s-1w, abnd 7959 ft.

Gulf's Schlicher-Thomas B-1, 330 s&w of ne cor nw¼ sw¼ 35-3s-1w, Wilcox 10,130 ft, perf 10,333-58 ft, 10,196-210, 10,248-264, 10,280-300, 10,166-84 ft, pump 379 bbls 38.2-gr, 3/16-in, td 10,555 ft.

Jefferson Parish—Delta Farms: Texas Co.'s State-Bayou Perot 1, 744 s 5833 e of nw cor 6-17s-23e, pump 260 bbls 32.5-gr, 9/64-in, td 9601 ft.

LaFourche Parish — Leeville: Texas Co.'s LLE-Leeville 94, 4663 w 2829 s of ne cor se¼ 34-21s-22e, perf 9650-62 ft, pump 206 bbls 32.7-gr, ⅛-in, td 9712 ft.

St. Charles Parish — Paradis: Texas Co.'s Dufrene 1, 10,550 s 240.4 e of ne cor frac sec 8 on unit 262 in 39-14s-20e, reperf 8926-35 ft, pump 195 bbls 36-gr, ⅛-in, td 11,901 ft.

Texas Co.'s LLE-Paradis 32, 685.1 s 693.4 e of nw cor sec 17 in 40-14s-20e, reperf 10,150-160 ft, pump 150 bbls 35.3-gr, ⅛-in, td 11,732 ft.

St. Charles Parish—Lake Salvador: Texas Co.'s State-Lake Salvador 22, n 37° 08 mins w fr USCGS Mon. "1N" in Lake Salvador, perf 9980-90 ft, pump 259 bbls 34-gr, 9/64-in, 809/1, td 10,200 ft.

St. Mary Parish—Charenton: Fifteen Oil Co.'s South Coast Corp. 5, 1838 s 45° 30 mins w 405 s 44° 30 mins e fr ne cor 24-13s-10e, sand 6820 ft, perf 6822-28 ft, pump 203 bbls 38.5-gr, 9/64-in, td 7280 ft.

SOUTH LOUISIANA OUTPOST

Beauregard Parish—W. Neale Failure: Sun's Central Coal & Coke Co. 2, 510 n 660 w of se cor ne¼ sw¼ 30-3s-11w, elev 99 df, cratered, abnd 4442 ft.

SOUTH LOUISIANA NEW PAY

Vermillion Parish—Erath Discovery: Phillips' Adelaide 1, nw¼ ne¼ nw¼ 28-13s-4e, 5½ 7500 ft, perf 7380-83 ft, pump 240 bbls 30-gr, ⅛-in, 100/1, td 7500 ft.

SOUTH LOUISIANA WILDCAT

Terrebonne Parish—Bayou Penchant Discovery: Superior of Cal.'s Continental Ld. & Fur Co. 1, 1589 s 4242 w of ne cor 30-18s-14e, perf 9929-35 ft, pump 19 bbls cond, 3,570,000 gas, 12/64-in, td 11,828 ft.

NEW MEXICO

Eddy County: Burnham Oil Co.'s State 4, c nw se 2-17s-30e, flow 252 bbls, 2-in, 2920-64 ft.

Nay Hightower et al's Grier 12, c nw se 30-16s-31e, flow 390 bbls, ½-in, shot 140 qts 3170-3228 ft.

Schuster and Messinger's Page 2, c nw nw 15-21s-28e, anhydrite 360 ft, salt 620-1300 ft, abnd 2984 ft.

Texas Trading Co.'s Grier 3, c nw sw 29-16s-31e, flow 200 bbls, 2-in, 3295-3310 ft.

R. R. Wooley et al's Arnold 5-A, c se se 22-17s-30e, flow 80 bbls, 2-in, shot 100 qts 1940-65 ft.

Lea County—Lovington: Magnolia's State 4-R, c nw se 2-17s-36e, elev 3844 ft, pump 7 bbls, 1000 gals acid 4940-74 ft.

Lea County—Vacuum: Texas Co.'s State 11-O, c nw se 33-17s-34e, elev 4055 ft, flow 325 bbls, 2-in, 4300-4710 ft.

San Juan County—Rattlesnake Dome: Continental-Santa Fe Corp.'s Rattlesnake-Munoz 13, c of n½ 2-29n-19w, abnd 855 ft.

San Juan County—Pictured Cliffs: Southern Union Production Co.'s Walker 1, c nw 3-29n-12w, 1,350,000 gas, 1943-90 ft, td 2050 ft.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

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FOR SALE

■ **PIPE:** 40′ plain end. 6000′ 8″, 2000′ 5″, 14,000′ 4″, 3000′ 3½″, 7000′ 3″, 2600′ 2″. George Hess, Galva, Kansas.

■ **For Sale: 1 Clark 120 H. P. drilling engine with reversible clutch. Claud White, Breckenridge, Texas or J. L. Higginbotham, 2514 Commerce St., Dallas, Texas.**

■ **FOR SALE: 2 Deming Fig. 50—4½″ x 6″ Standard Fitted Single Acting Triplex Pumps, maximum capacity 80 GPM on 300-foot lift. Pumps mounted on cast iron sub-base for direct connection through gear and pinion to 5- or 7½-h.p. motor or can be arranged for belt drive. Each pump equipped with 13-feed Madison-Kipp 30-pint force feed lubricator. Pumps now in Alamo Iron Works shop, San Antonio, being thoroughly overhauled to new condition. Price each $634.00. G. C. Hagelstein, San Antonio C-6331, or Houston Preston 6161.**

■ Coryell County ranch, 2350 acres well improved, running water, two fine homes, open prairie grass land, adjacent to new paved highway now under construction. Price $25.00 acre. Write: MOORE & RUSH REALTY COMPANY, 406 FRANKLIN ST., WACO, TEXAS.

■ Beautiful Bosque county ranch, over 2000 acres, open prairie grass land, fine improvements, plenty fine barns and outhouses, artesian water. Price $35.00 acre, for any particulars write MOORE & RUSH REALTY COMPANY, 406 FRANKLIN ST., WACO, TEXAS.

■ For Sale: 30,000 ft. 8-⅝″ O.D. 28.55-pound Used Steel Line Pipe P.E. Beveled for welding. Excellent condition. Address: Box 32, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE—The following Used Equipment Located at Vinton, Louisiana

9 Ideco 94 Ft. galvanized steel derricks, 159,000-pound capacity with crows nest, excellent condition
8 G. E. Induction Motors, 15-35 H.P., 1150-550 R.P.M., 440 Volt, three-phase
6 Transformers
8 G. E. Manual Controllers, Service oil well pumping type C. R. 3209-60 cycle, D. L. 2203414, 35-15 H.P., 440 Volt, three-phase, with grid stand
6 3 sheave Ideco production crown blocks, 3 sheave 22″ x 2″ 15/16 trunnions, W/2—10″ x 7″ beams
1 Cable tool drilling crown block complete, W/5 sheaves, one 30″ crown sheave, one 26″ sand sheave and 4-24″ casing sheaves all having 5″ trunnions, W/Bearings, 4 Beams 12″ x 8′
8 Boykin counter shaft and pulleys
7 Parkersburg standard rig complete with wooden band-wheel, wooden beam, steel pitman, Rex beam hangers
3 Westinghouse Nuttall Geared Units, 35-15 H.P.
5,000 ft. 10-inch casing, 20,000 ft. 7-inch casing, 15,000 ft. 2-inch tubing, 10,000 ft. ⅝-inch rods.

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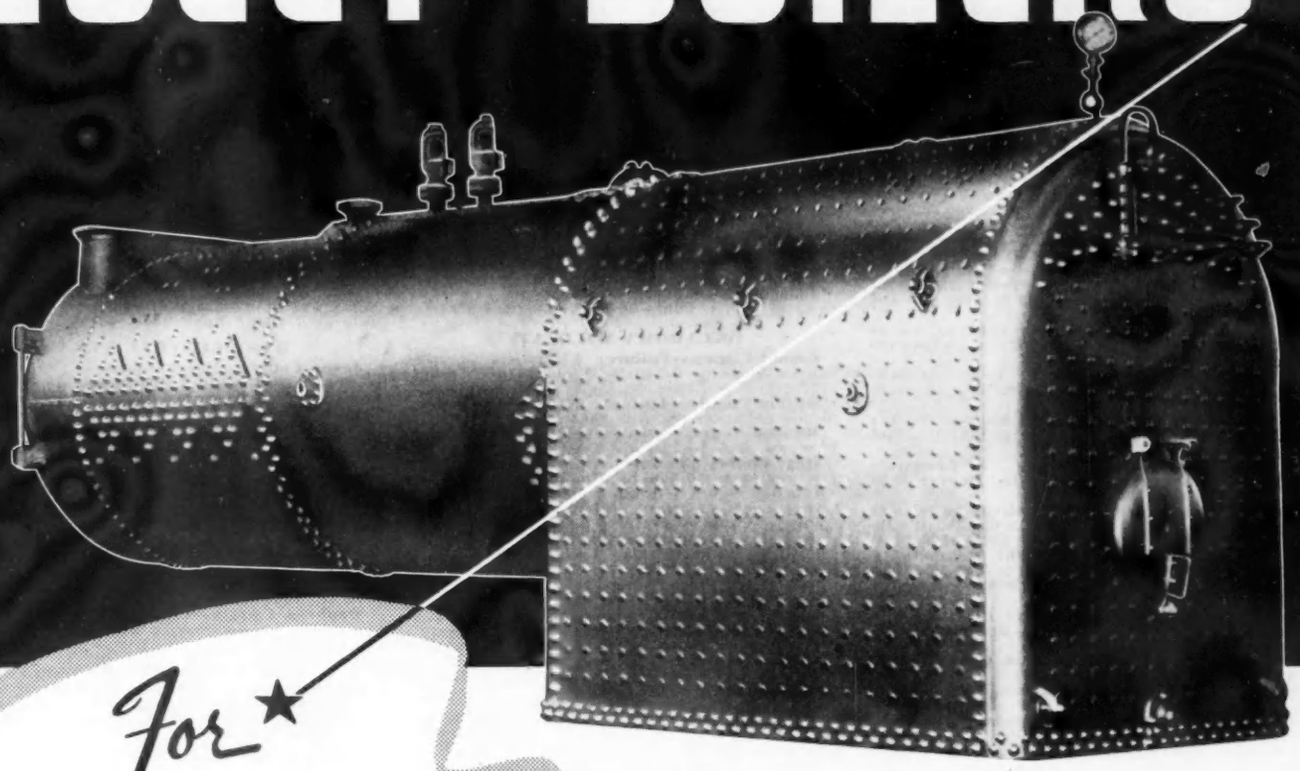

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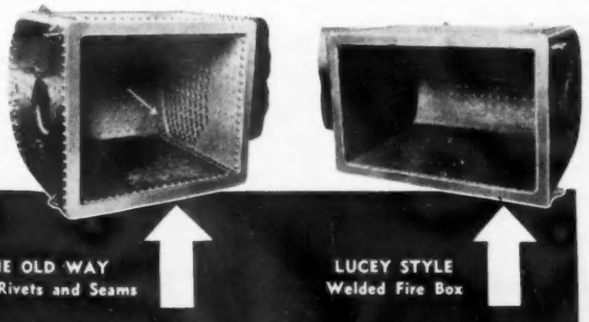

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NEW MEXICO WILDCAT DEEPENED

Lea County—Failure: John B. Hawley Jr.-Northern Ordnance's Iverson 1, c nw nw 30-18s-33e, elev 3779 ft, otd 4836 ft, abnd 4936 ft.

OKLAHOMA

Caddo County—W. Cement: Amerada's Edwards 1, ne sw nw 1-5n-10w, Medrano 5800 ft, flow 528 bbls, 689,000 gas, 5910 ft.

Carter County—Tussy: Skelly's Miller 8, se nw ne 5-1s-3w, Tussy 2635-43 ft, pump 80 bbls, 2860 ft.

Carter County—W. Hewitt: H. F. Gibson's Mertens 6, nw nw se 20-4s-2w, abnd 2511 ft.

Coal County—Lula: (semi-wildcat) Stanolind-Amerada's Ill. Bankers Life 1, c w½ ne sw 22-3n-9e, Cromwell 3675 ft, 4,000,000 gas, 3770 ft.

Creek County—Glenn: Gulf's Clayton 35, se ne nw 9-17n-12e, Glenn 1486-1649 ft, shot 310 qts, pump 14 bbls oil, 5 bbls wtr, 1654 ft.

Sinclair-Prairie's L. L. Berryhill 58, nw se se 16-17n-12e, Glenn 1406-1569 ft, shot 140 qts, pump 10 bbls, 1570 ft.

Sinclair-Prairie's L. L. Berryhill 59, sw se se 16-17n-12e, Glenn 1415-1570 ft, shot 140 qts, pump 5 bbls, 1574 ft.

Greer County — Un-named: E. K. McLennan's Dixon 1, nw nw ne 31-6n-21w, Granite Wash 712 ft, abnd 720 ft.

Hughes County—Wetumka: Keener O & G's Scott 1A, se se ne 6-9n-10e, sand 1857 ft, abnd 1890 ft.

Kay County — Un-named: C. A. Leonard's Vickery 5, sw ne nw 28-27n-1e, Hoover 1985 ft, 2,000,000 gas, 2005 ft.

Lincoln County—Chandler: Great Lake Carbon's Johnson 1A, nw se ne 3-14n-3e, B'ville 4362 ft, shot 40 qts, pump 86 bbls, 4375 ft.

Marshall County—Aylesworth: Magnolia et al's Ward-Reins "C" 1, ne se se 13-6s-6e, Tulip Creek 2873-3012 ft, 10,000,000 gas, td 2972 ft, pb 2970 ft.

Noble County—E. Otoe City: Berry et al's Casford 1, sw ne sw 12-22n-1e, Perry gas sand 2915 ft, flow 160 bbls, 2923 ft.

Oklahoma County—Oklahoma City: British American's Schillings 3, ne sw se 10-11n-3w, Wilcox 6398 ft, shot 15 qts, pump 24 bbls oil, 4 bbls wtr, 6631 ft.

Oklahoma County—W. Edmond: (semi-wildcat) F. G. & W. J. Fox's Kiefer 1, c nw nw 4-13n-4w, Hunton 6768 ft, 1000 gals acid, flow 300 bbls, 6907 ft.

Osage County—Barnsdall: Barnsdall's No. 8, ne sw nw 11-24n-11e, B'ville 1665 ft, shot 100 qts, swab 6 bbls oil, 1714 ft.

Osage County—Big Bend: Oliphant's No. 1, sw sw sw 21-25n-3e, Wilcox 4197-4255 ft, pb and abnd 2840½ ft.

Osage County—Hickory Creek: (semi-wildcat) Sagamore's 422, se ne ne 5-28n-12e, Miss 1736 ft, 300,000 gas, 1758 ft.

Ross O & G's 10, se sw nw 14-29n-11e, sand 998-1064 ft, shot 60 qts, pump 5 bbls, 1069 ft.

Pontotoc County — Bebee: Lake Oil Co.'s Robertson 9, w½ nw se 19-5n-5e, Viola 2425-50 ft, pump 35 bbls, 2455 ft.

Seminole County — Un-named: (semi-wildcat) McIntyre's Lillard 1, ne ne ne 9-8n-8e, 2nd Cromwell 3327 ft, abnd 3383 ft.

Stephens County—Velma: Skelly's Crosbie Unit 2, ne sw nw 25-1s-5w, sand 1491-1510 ft, pump 75 bbls, 1511 ft.

Stephens County—W. Duncan: T. H. McCasland's Johnson 1, sw se ne 24-1s-9w, sand 2528-44 ft, pump 132 bbls, 2544 ft.

Stephens County—W. Loco: Pace et al's Jones 1, ne nw nw 13-3s-5w, sand 912-22 ft, pump 24 bbls, 922 ft.

Pace et al's Jones 2, nw nw nw 13-3s-5w, sand 926-36 ft, pump 30 bbls, 936 ft.

OKLAHOMA WILDCATS

Creek County—Failure: Fleetwood et al's Wilson 1, ne ne 3-14n-9e, Viola 3610 ft, abnd 3672 ft.

Garvin County—Failure: Stanolind's Bety 1, ne nw ne 22-3n-1w, Arb 3563 ft, abnd 3732 ft.

Hughes County—Discovery: Hall's Griswald 1, se nw se 5-9n-12e, 3,000,000 gas, td 1957 ft.

Kay County—Failure: Illing et al's Stone 1-A, c s se se 30-25n-1e, abnd 3220 ft.

Lincoln County—Failure: Wilcox Oil's DeLozier 1, sw sw sw 10-14n-6e, abnd 3323 ft.

Payne County—Failure: Gutowsky's Foche 1, se sw se 2-20n-4e, abnd 3986 ft.

Pottawatomie County—Failure: Stanolind's Bell 1, se se sw 21-11n-2e, abnd 6025 ft.

WEST TEXAS

Andrews County—Fullerton: Fullerton Oil Co.'s Logsdon 1, c sw sw PSL 7, blk A-32, flow 864 bbls, 24/64-in, 10,000 gals acid 6784-7173 ft.

Magnolia's Logsdon 1, c nw nw PSL 19, blk A-32, elev 3310 ft, flow 531 bbls, 5/8-in, 8000 gals acid 7055-7105 ft, td 7195 ft.

T. P. Coal & Oil Co.'s Jackson 6, c se se PSL 17, blk B-32, flow 2320 bbls, 2-in, 10,000 gals acid 6747-7240 ft.

Andrews County—Mabee: Texas Co.'s Mabee 5, c sw ne G&MMB&A 43, blk 40, T-2-N, elev 2922 ft, Grayburg 4405 ft, San Andres 4695 ft, pump 240 bbls oil, 10% bs&w, 5000 gals acid 4695-4722 ft.

Cochran County—Slaughter: A. A. A. Oil Corp.'s Boyd-Texaco 4, 3794 ft snl 555 ft wel, Lge 53, Oldham CSL, pump 331 bbls, 10,000 gals acid 5022-46 ft.

Magnolia's Mallet 25-J, 1450 ft snl 1339 ft ewl lab 16, Lge 50, Scurry CSL, flow 768 bbls, 10,500 gals acid 4976-5050 ft.

Cochran County — N W Slaughter: A. W. Cherry-Barron Kidd's Wright 1, 660 ft out ne cor lab 8, Lge 59, Martin CSL, pump 557 bbls, 12,000 gals acid perf 4926-59 ft, td 4978 ft.

Crane County—McElroy: Bert F. Weekley et al's University-Tidal 1, ne sw nw sec 27, blk 30, flow 909 bbls, 2-in, shot 550 qts 3018-3180 ft.

Crane County—Sand Hills: Gulf's Waddell et al 44, 2123 ft snl 554 ft ewl PSL 21, blk B-26, flow 2020 bbls 35-gr, 542/1, ¾-in, 4385-4614 ft.

Gaines County—Wasson: Bay Pet. Corp.'s Wasson-Humble 4, 2200 ft snl 880 ft ewl PSL 53, blk AX, pump 97 bbls oil, 34½% bs&w, 8000 gals acid 4937-78 ft, td 4987 ft.

Hockley County—Slaughter: Falcon Co.'s Grant 5, c of lab 12, Lge 42, Rains CSL, flow 447 bbls, ¾-in, 8000 gals acid 4903-37 ft.

Jerry Hawkins et al's Mallet 72-A, 580 ft out nw cor lab 7, Lge 47, Edwards CSL, flow 331 bbls, 2-in, 9500 gals acid 4874-4975 ft.

Honolulu's Slaughter 43-B, c of lab 51, Lge 37, Zavalla CSL, flow 1137 bbls, 12,000 gals acid 4894-4990 ft.

Tevis Morrow et al's Mallet 65, c of lab 19, Lge 48, Edwards CSL, flow 528 bbls, 10,000 gals acid 4925-71 ft.

Tevis Morrow et al's Sanford 1, 440 ft out sw cor lab 18, Lge 42, Kaufman CSL, flow 326 bbls, 6000 gals acid 4869-4912 ft.

Magnolia's Mallet 20-C, 580 ft out nw cor lab 22, Lge 53, Scurry CSL, pump 157 bbls, 4500 gals acid, td 5070 ft.

Mitchell County—Westbrook: Col-Tex Ref. Co.'s Gay 1, ne ne ne T&P 42, blk 28, T-1-N, elev 2146 ft, pump 131 bbls, shot 970 qts 3015-3100 ft.

Col-Tex's Morrison 18, 2329 ft nsl 976 ft ewl T&P 21, blk 28, T-1-N, pump 25 bbls oil, 5 bbls wtr, 8000 gals acid 2848-3100 ft.

Pecos County—Apco: Skelly's Crockett 3-B, 805 ft fr nel 440 ft ewl of 123.9-ac lse, Pink Phelps Vacancy, elev 2454 ft, Ellenburger 4580 ft, flow 537 bbls, ½-in, perf 4651-4755 ft, td 4760 ft.

Ward County—Gulf-O'Brien: Gulf's Hutchings 175, ne nw se G&MMB&A 4, blk F, flow 520 bbls, shot 743 qts 2674-3080 ft.

Gulf's Hutchings 177, ne nw se G&MMB&A 9, blk O, flow 2381 bbls, shot 407 qts 2532-2700 ft.

Winkler County—Hill: Sunray Oil Co.'s Hill 3, c sw sw PSL 18, blk B-11, flow 84 bbls, ¼-in, shot 30 qts 3190-3200 ft.

Yoakum County—West: Schermerhorn Oil Corp.'s Moss-Skelly 1, c se ne sec 606, jkd and abnd 2248 ft.

WEST TEXAS WELL DEEPENED

Ward County—Estes: Gulf's Estes 14, H&TC 38, blk 34, otd 2940 ft, flow 84 bbls, gas lift, 3010-84 ft.

WEST TEXAS WILDCATS

Lynn County—Failure: Sohio Pet. Co.'s Allsup-Honolulu 1, c se nw E. L. Ry. 113, blk 12, elev 3232 ft, anhydrite 2030 ft, dolomite 3850 ft, San Angelo 4930 ft, Clear Fork 5620 ft, abnd 7142 ft.

Yoakum County—Failure: N. G. Penrose's Brownfield-Humble 1, c ne ne sec 563, elev 3550 ft, anhydrite 2700 ft, brown lime 4470 ft, San Andres 5010 ft, abnd 5501 ft.

WEST TEXAS OUTPOST

Crane County—Sand Hills Extension: John I. Moore et al's Barnsley 1, c ne ne PSL 42, blk 32, 2¾ mi e of production, elev 2498 ft, pump 189 bbls 34.5-gr oil, 2% clear wtr, 6000 gals acid Clear Fork 4500-4651 ft.

WEST CENTRAL TEXAS

Jones County—Roark-Noodle: R. H. Roark et al's Eoff-Humble 3, 400 ft snl 330 ft ewl of 150-ac tr se T&P 40, blk 18, elev 1824 ft, Flippen 2584 ft, Hope 2748 ft, Swastika 3003 ft, flow 220 bbls, ¼-in, sand 3005-11 ft.

WEST CENTRAL TEXAS WELL DEEPENED

Jones County — Wimberly: Fain-McGaha's Dunigan 1-a, 370 ft nsl 330 ft wel of w-60 of s100-ac blk 89, otd 2434 ft, dual prod, flow 1404 bbls, ¾-in, 2000 gals acid 2479-2536 ft.

WEST CENTRAL TEXAS WILDCATS

Jones County—Failure: R. H. Roark et al's Caffey 1, se se se S. P. Ry. 17, blk 2, elev 1775 ft, abnd 2741 ft.

Stephens County—Failure: C. O. Terrell et al's Riddle 1, sw sw sw T&P Ry. 46, blk 6, abnd 2038 ft.

SOUTH CENTRAL TEXAS

Frio County—Pearsall: 990 s 75° e of No. 6 on 1242-ac lse, John H. Gibson sur 16, elev 528.2 ft, pay 3893 ft, perf 3902-05 ft, 120 bbls 25-gr, 3/16-in, td 3910 ft.

SOUTH CENTRAL TEXAS WILDCAT

Zavala County—Failure: Texas Co.'s B. B. Stuart 1, 660 fr n&wl, B. F. Burt sur 301, on 10,686-ac lse, abnd 3056 ft.

SOUTHWEST TEXAS

Duval County—Benavides: Hiawatha O & G Co.'s Southland Life Ins. Co. 25, 466 fr nl 4300 fr el 6343-ac lse, abnd 4874 ft.

Duval County — Sejita: Cox & Hamon's Dickey 3, 467 fr sl 1795 fr el blk 6, sec 27, Realitos subdvn, San Pedro de Charco Redondo Gr, elev 342.5 ft, pay 5762 ft, perf 5775-90 ft, 138 bbls 45-gr, ⅛-in, td 5794 ft.

SOUTHWEST TEXAS WILDCATS

McMullen County—Failure: Gulf's H. H. Shiner Est. 1, 660 fr s&wl ne¼ sec 55, C. C. Shumway subdvn Shiner Rch, flow 150,000 dry gas, mud & wtr, abnd 8113 ft.

Starr County—Failure: Baldridge, King & Nichols' Rodriguez 2, 330 fr nl 3658 fr el 570.91-ac lse, J. A. de la Garza Falcon porc 80, abnd 1153 ft.

LOWER TEXAS COAST

Bee County—S. Caesar: Ton Slick's T. Slick Fee 1, 468 fr s&wl blk 33, Medio Rch subdvn 102.5-ac tr, elev 417 ft, pay 6522 ft, perf 6574-79 ft, flow est 18,600,000 gas spray cond, td 6671 ft.

Jackson County—Maubro: Humble's Prichett Est. 4, 3832 fr nl 467 fr wl 400-ac Prichett tr on 300-ac lse, Abraham M. Clare sur AB-12, pay 5209 ft, perf 5209-12 ft, 259.2 bbls 26.6-gr, 1% wtr, 3/16-in, td 5666 ft, pb 5220 ft.

Jim Wells County—Seeligson: Sun's Canales 29, 4620 fr nwly wl 3000-ac lse elev 138.5 ft, sand 5940 ft, perf 5970-79 ft, 156 bbls 42-gr, ⅛-in, td 6057 ft, pb 6022 ft.

San Patricio County—Taft: Humble's J. W. Mayo Acct. 37, 1787 fr wl 1980 fr nl 220-ac lse, J. W. H. Ottman sur, elev 53 ft, sand 4908 ft, 44 bbls 24-gr, ⅛-in, td 4912 ft.

TEXAS GULF COAST WILDCATS

Brazoria County—Failure: Salt Dome Oil Corp.'s A. E. Martin 1, 467 fr n&wl 40-ac lse HT&B sur A-299, abnd 8030 ft.

Trinity County—Failure: Continental's Houston County Timber Co. 1, 5500 n 150 e fr sw cor, A. Henry sur A-882, abnd 4841 ft.

EAST TEXAS

Anderson County—Long Lake: Tex-Harvey Oil Co.'s J. K. Collier 1, 467 ft out of se cor of 60-ac lse, Edley Ewing sur, elev 364 ft, Woodbine 5334 ft, flow 61 bbls, 6/64-in, perf 5395-5412 ft.

Camp County—Pittsburg: Gulf's Boyce 1-A, 4250 ft wel 2550 ft snl, Lucinda Williams sur, on 65.8-ac unit, elev 393 ft, massive anhydrite 7165-7325 ft, flow 249 bbls 41.8-gr, ¼-in, 110/1, perf 7957-89 ft, open hole 8012-60 ft, td 8080 ft.

Houston County—Grapeland: Geier-Jackson

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Lubrication is insurance against corrosion and is the safest way to prevent excessive internal and external rope wear. Lubrication will materially assist in controlling the wear on sheaves and drums and in prolonging rope life, resulting in increased operating efficiency.

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Excellay Preformed

UNITED STATES STEEL

Recycling Co.'s Kennedy 1, 365 ft fr n&sl 867 ft fr ewl 50-ac, T. H. Leaverton sur, elev 456 ft, Woodbine 6003 ft, abnd 6018 ft.

Rusk County—Henderson: Beacon O&R Co.-American Liberty's Brown 1, 2700 ft wel 1935 ft nsl, Taylor Brown sur, elev 417 ft, flow 193 bbls 60-1-gr distil, 3,737,000 gas, 19/64-in, 6000 gals acid, Pettit 7220-29, 7244-64 ft, td 7322 ft.

Smith County—Chapel Hill: Rudco O & G Co.-Genecov & Rudman's Johnson 1, 560 ft out of sw cor 50-ac lse, F. Ariola sur, elev 487 ft, massive anhydrite 7145-7395 ft, James 7853 ft, Hill sand 7469 ft, Pettit 8031 ft, Travis Peak 8271 ft, 2,250,000 gas, 75 bbls distillate per million ft, Hill perf 7486-7504, 7600-14 ft, td 8294 ft.

EAST TEXAS WILDCATS

Freestone County—Failure: C. C. Lanier et al's Gilliam 1, 830 ft fr sw 660 ft fr nw 984 ft fr sel of 53.9-ac tr, J. B. McElyea sur, elev 474 ft, Pecan 2845 ft, Austin 3860 ft, jkd and abnd 4662 ft.

Navarro County—Failure: Brown & Wheeler's Gibson 1, 660 ft out of m/e/ne cor, Julian Fontenoy sur, elev 286 ft, Sub-Clarksville 3325-33 ft, Comanche 4287 ft, Fredericksburg 5125 ft, Paluxy 5340 ft, Glen Rose 5535 ft, massive anhydrite 6520-6640 ft, Rodessa 6650 ft, Pettit 7195 ft, Travis Peak 7370 ft, abnd 7528 ft.

Robertson County—Failure: M. D. K. Fitswater et al's Stegall 1, 3150 ft fr ne 660 ft nsl, E. McMillan sur, elev 404 ft, abnd 3400 ft.

Van Zandt County—Discovery: Superior of Cal.'s Groves 1, 330 ft fr nel 330 ft fr sel of 107-ac tract, E. Vansickle sur, elev 462 ft, Pecan 2389 ft, Austin 3411-3833 ft, Woodbine 4312 ft, Georgetown 5127 ft, Ft. Worth 5745 ft, Paluxy 6235 ft, Glen Rose 6535 ft, massive anhydrite 7600-7750 ft, Pettit 8375 ft, Travis Peak 8480 ft, pump 70 bbls 39-gr, 3% bs&w, 7000 gals acid Travis Peak 8552-70 ft, td 9002 ft.

NORTH TEXAS

Archer County: H. S. Grace et al's Carter 1, 1540 ft snl 200 ft ewl sec 37, blk 5, Clark-Plumb sur, abnd 1157 ft.

Martin Properties' Purcell 3, 660 ft out ne cor 63¼-ac lse, Jose Ostane sur, pump 70 bbls 1131-46 ft.

Texas Co.'s Turbeville 5-N, 700 ft nsl 1050 ft wel blk 157, Robt. Carsoni sur, abnd 1157 ft.

White & Duncan's Richardson-Texaco 3-B, 175 ft nsl 150 ft ewl nw, W. C. McCune sur A-943, pump 26 bbls, 1176-82 ft.

Archer County—Scotland: Auto Ordnance Corp.'s Coleman-Shell 2, 330 ft snl 1650 ft wel lot 4, ATNCL sec 78, Bend 5134 ft, Mississippi 5715 ft, flow 408 bbls, 3/8-in, 2000 gals acid, Bend 5131-45 ft, td 5725 ft.

Clay County: Texas Co.'s Saner 9, 575 ft fr nel 1680 ft fr nwl GC&SF Ry sur A-794, pump 9 bbls, 1083-1104 ft.

Jack County—Ellis: Hanlon & Buchanan's White 1, 2283 ft snl 3262 ft wel, Wm. Berryman sur A-40, Bend 4763 ft, abnd 5250 ft.

Jack County—Weir: Continental's Cooper 3, 330 ft snl 1574 ft ewl, F. D. Hammond sur, flow 216 bbls, ¾-in, shot 10 qts 2327-34 ft, td 2342 ft.

Montague County—Dodson: Sinclair Prairie's Benton 3, 330 ft snl 2163 ft ewl of 120-ac lse, T. R. Jackson sur, Bend 5013 ft, Ellenburger 5213 ft, pump 644 bbls, perf Strawn 4532-46 ft, td 5258 ft.

Montague County—Hildreth: O. C. Whitaker Oil Co.'s Donald Bros. 1, 330 ft nsl 1125 ft wel, A. J. Cook sur A-1073, abnd 6464 ft.

Wichita County: Texas Co.'s Waggoner Est. 446-A, 2460 ft snl 930 ft wel GC&SF sec 20, pump 5 bbls, shot 5 qts 535-41 ft.

Wilbarger County: W. T. Waggoner Est.'s Fee 3-PP, 330 ft snl 2586 ft ewl H&TC 25, blk 6, KMA lime 3804 ft, Ellenburger 4378 ft, pump 123 bbls oil, 72 bbls wtr, 1500 gals acid, Ellenburger perf 4378-81 ft, td 4396 ft.

Young County: L. T. Burns et al's Foehr 4-A, 750 ft nsl 1150 ft wel n½ TE&L Co. sec 222, pump 4 bbls, 974-974 ft, td 976 ft.

Hanlon & Buchanan-Auto Ordnance Corp.'s King 2-F, 495 ft nsl 1495 ft wel TE&L Co. sec 460 ft, Bend 3840 ft, Marble Falls 4166 ft, Miss 4802 ft, flow 51 bbls oil, 4% wtr, ½-in, 2000 gals acid 3840-60 ft, td 4816 ft, pb 3947 ft.

Panhandle Ref. Co.-Ben Rankin's Scott 1, 800 ft snl 600 ft ewl of 372-ac tr, J. G. Garrett sur A-108, Bend 3365 ft, 750,000 gas, shot 25 qts 3119-27 ft, td 4375 ft, pb 3150 ft.

NORTH TEXAS WATER FLOOD WELLS

Archer County: Producers Development Co.'s Thomas 1-W, 10 ft out sw cor n½ lot 5, Nathan Thomas sur A-454, sand 1150-64 ft.

Producers Development Co.'s Thomas 2-W, 10 ft nsl 310 ft ewl n½ lot 5, sand 1148-64 ft.

Producers Development Co.'s Thomas 3-W, 290 ft snl 310 ft ewl s½ lot 5, sand 1152-72 ft.

NORTH TEXAS WELL DEEPENED

Montague County: The Texas Co.'s Jones 1, 200 ft out nw cor lot 2, W. Donoho sur, otd 583 ft, pump 10 bbls, plus 2 bbls wtr, 762-780 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Fortex Oil Corp.'s Abercrombie 1, 1000 ft snl 50 ft ewl sec 98, blk 4, Clark-Plumb sur, abnd 1255 ft.

Panhandle Ref. Co.'s Wilson 1, nw nw se ATNCL sec 99, Bend 5017 ft, abnd 5090 ft.

Clay County—Failure: Sussex Oil Co.'s Perkins 2, 1250 ft snl 765 ft wel sec 80, Byers sur, abnd 1153 ft.

Cooke County—Failure: Chester A. Martin (was W. F. Russell et al's) Wylie 1, 3150 ft nsl 2450 ft wel, Thos. Cooke sur A-258, elev 881 ft, Ellen 1377 ft, abnd 1459 ft.

Wichita County—Failures: Oscar Donley, tr's Bostic 1, 850 ft snl 330 ft ewl lot 3, Henry Hastie sur A-98, abnd 1503 ft.

W. H. Rogers, Jr., Tr.'s Shappell 1, 990 ft out ne cor blk 16, Cowherd subdvn, G. W. Childers sur A-31, elev 976 ft, Bend 4140 ft, Ellen 5086 ft, abnd 5110 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 181, 440 ft nsl 1320 ft wel I&GN 195, blk 3, pump 138 bbls, shot 200 qts 3140-76 ft.

Gray County: Cities Service's Wall 5-B, ne ne se I&GN 162, blk 3, pump 60 bbls, shot 140 qts 3190-3280 ft.

Texas Co.'s Chapman 14-A, 846 ft snl 1768 ft ewl H&GN 51, blk 25, pump 58 bbls, granite-wash 2835-80 ft.

Wilcox O&G Co.'s Combs-Worley 52, se se se I&GN 37, blk 3, abnd 3175 ft.

Moore County: Shamrock O&G Corp.'s Sneed 21, c sec 15, blk 1, J. Poitevent sur, 41,500,000 gas, 317 lbs rp, 6250 gals acid 2565-3197 ft.

Wheeler County: E. B. Clark & Martin's Small 1, sw sw se H&GN 71, blk 13, elev 2260 ft, abnd 2250 ft.

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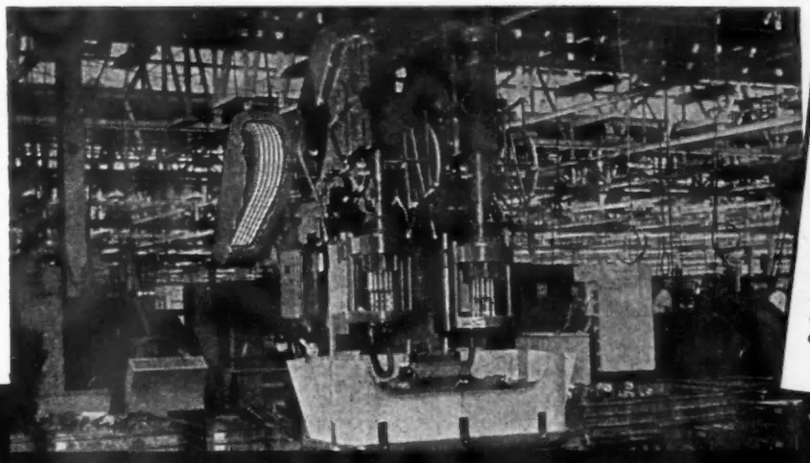

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United States Wildcat Starts

ARKANSAS

Nevada County: Ryan Consolidated Pet. Co.'s Laws 1, c se se 34-12s-23w, lcn.

Union County: Southern Oil & Gas Co.'s J. D. Trimble 1, c se nw 13-16-17, lcn.

Ashley County: Union Producing Co.'s Crossett Lumber Co. E-1, 3370.6 ft s 1258.3 e of nw cor 12-9-7, lcn.

CALIFORNIA

Kern County: Di Giorgio Fruit Co.'s 35-10, nw ne se 10-31-29, Mountain View area, lcn.

Yolo County: Superior's Oeste 1, se se ne 10-8-1, Fairfield Knolls area, mim.

Santa Barbara County: Union's McNee 1, se se sw 20-9-32, East Cat Canyon area, rig.

KANSAS

Barton County: Ash's Schlochtermeyer 1, swc se 5-19s-11w, mim.

Helmrich & Payne's Willcut 1, nwc 15-19s-15w, dr 1930 ft.

Butler County: Adair & Morton's Kraft 1, nw ne sw 9-29s-7e, rum.

Kiowa County: Vierson & Cochran's Johnson 1, nec se 22-28s-18w, lcn.

McPherson County: Phil-Han's Meier 1, ne nw ne 2-18s-1w, dr 985 ft.

Allison et al's Rupp 1, swc nw 13-21s-2w, dr 2340 ft.

Ottawa County: Emrich's Hopgood 1, swc 23-10s-1w, dk.

Pawnee County: Continental's Browne 1, nec 20-21s-20w, lcn.

Reno County: Phillips' Tonn 1, swc ne 15-25s-4w, lcn.

Vierson & Cochran's Miller 1, se nw ne 31-25s-9w, lcn.

Smith County: Stanolind's Rehor 1, nw nw se 30-5s-15w, lcn.

Stafford County: Bridgeport's Cooper 1-A, swc 29-24s-11w, mim.

SOUTH LOUISIANA

St. Charles Parish: Pure's Gen. American Transportation Corp. 1, start ne cor sec 6 go ne alg nwl sec 7 fr 1617 th 3008 se at ra to lcn 7-12s-8e, lcn 11,000-ft test.

NEW MEXICO

Lea County: Phillips' State-Nemex 1, c ne sw 35-17s-33e, lcn.

OKLAHOMA

Bryan County: A. Z. Phillips' Hughes 1, sw nw nw 34-6s-11e, spud.

Grady County: Okla. Nat. Gas' Rider 1, ne ne se 1505n-8w, c&p.

Pawnee County: Curtis Oil's Rice 1, nw nw sw 13-23n-5e, rur.

Payne County: Sunray's McKenzie 1, sw nw se 13-18n-3e, rur.

WEST TEXAS

Crane County: John I. Moore et al's W. N. Waddell Co. 1, 660 ft out w cor H&TC 19, blk 2, lcn 7500-ft Ellenburger test.

Gaines County: Gulf's W. W. Buck 1, c se nw W. T. Ry. 104, blk G, mim 5500-ft test.

Hockley County: T. P. Coal & Oil Co.'s Grissom Bros. 1, 660 ft out nw cor lab 10, Lge 24, McCulloch CSL, lcn 5500-ft test.

Pecos County: Bryce McCandless et al's University-Shell 1, nw nw ne sec 13, blk 26, lcn 2000-ft test.

Ray Pool et al's H. J. Eaton 1, 2310 ft nsl 330 ft ewl H&GN 3, blk 9, lcn 2000-ft test.

Texas Co.'s Alexander-Globe 1, c e¼ of e¼ H&GN 82, blk 10, rur 6000-ft Ellenburger test.

Yoakum County: Honolulu Oil Corp.'s P. M. Williams 1, c ne nw sec 78, blk D, J. H. Gibson sur, lcn 5500-ft test.

WEST CENTRAL TEXAS

Callahan County: H. G. Daniels Jr. et al's S. C. Hennessy 2, 440 ft snl 830 ft wel S. P. Ry. sec 1, lcn 1800-ft test.

Jones County: Hickok D&P Co.-Harry Reynolds-Joe Gallagher's Manley 2-A, 1120 ft nsl 820 ft ewl T&P 35, blk 14, lcn 1800-ft test.

Taylor County: W. H. Rogers Jr. et al's A. L. Cade 1, 330 ft out se cor T&P 12, blk 16, lcn.

SOUTH CENTRAL TEXAS

Caldwell County: J. F. Hair's B. F. Harper 1, 330 nl 379 fr el 376-ac tr, Stephen B. Morris sur, lcn 1000-ft test.

Edwards County: Flury McDaniel's Paul Turney 4, 780 fr wl 2310 fr sl of 1009.5-ac lse, Franks sur 164, lcn 427-ft test.

Zavala County: Texas Co.'s B. B. Stuart 2, 990 fr wl 2970 fr sl sec 306, O. de A. Saint Angelo sur, lcn 4500-ft test.

SOUTHWEST TEXAS

Duval County: Taylor Ref. Co.'s Atlee Park D-2, 805 fr el abt 1800 fr nl SA&MG sur 117, dr 2505 ft.

Jim Hogg County: Arkansas Fuel Oil Co.'s J. L. Spoonts 1, 9844 fr nl 10,930 fr wl of 10,512.9-ac lse & of Jose Manuel Ramirez Gr, cored 4900 ft.

Texas Co.'s T. T. East B-1, 330 fr pl 1575 fr wl 1228.6-ac B lse, dr 2550 ft.

Starr County: Sun's J. N. Salinas et al 1, 467 fr nl 3200 fr wl 1112-ac lse porc 38-39, Juris of Reynosa, lcn 5000-ft test.

T. E. Stephens' M. Hinojosa et al 2, 7500 fr nwl 6000 fr swl 4757.08-ac lse porc 109-111, dr 1472 ft.

Lochart & Davenport's Block Realty Co. 2, 330 fr sl 2500 fr wl 193.27-ac lse, J. de la Garza Falcon porc 80, lcn 2500-ft test.

Webb County: Sohio's R. Sanchez 1, 990 fr wl 2310 fr nl H&OBRR sur 1146, lcn 6000-ft test.

LOWER TEXAS COAST

Bee County: Bridwell Oil Co.'s George Ray 3, 1485 se of nwl, Anna Burke sur ab-5, elev 2003 ft, lcn 4000-ft test.

Goliad County: Continental's Victoria Albrecht et al 1, 330 fr sel 3550 fr nel of 800-ac lse, Manuel Carriona sur, lcn 9000-ft test.

Jackson County: Akron Prod. Co.'s Joseph Weardon 2, 454 fr nl 660 fr wl 900-ac lse I&GN sur 2, elev 110 ft, lcn 8000-ft test.

Jim Wells County: L. M. Josey, Rupert Cox & Dan Clark's Jackson 1, 330 fr n&el sec 21 Jose Pacheco Gr, lcn 6200-ft test.

Live Oak County: Clark & Stelzig's Albert West 1, 1320 fr sel 5372 fr swl, Jas. Warmsley sur 166, rig.

Humble's T. S. West 1, 2000 fr wl 4200 fr nl, H. Casanova sur 160, lcn.

Nueces County: C. P. Burton's W. C. Weaver 1, 330 fr n&el lot 5 blk 4, Geo. H. Paul's subdvn, M. L. de Herrera Gr AB-606, lcn 6000-ft test.

Gulf's Carrie Chapman et al 1, 3667 s alg wl Carrie Cheeves et al tr fr nw cor th 660 e at ra, lcn 8000-ft test.

EAST TEXAS BORDER

Harrison County: Hunt Oil Co.'s Bailey and Martin 1, J. J. Martin sur, Trinity series test, mim.

EAST TEXAS

Hunt County: Hollandsworth Dr. Co.-Stanolind's C. H. Kimbell 1, 2257 ft nsl 5750 ft wel, Jas. Cole sur, 2 mi n by e Campbell, lcn Paluxy test.

Nacogdoches County: Roberts Oil Co.'s R. E. Ramblin 1-A, 330 ft ewl 550 ft snl 97½-ac lse, J. Simpson sur, lcn.

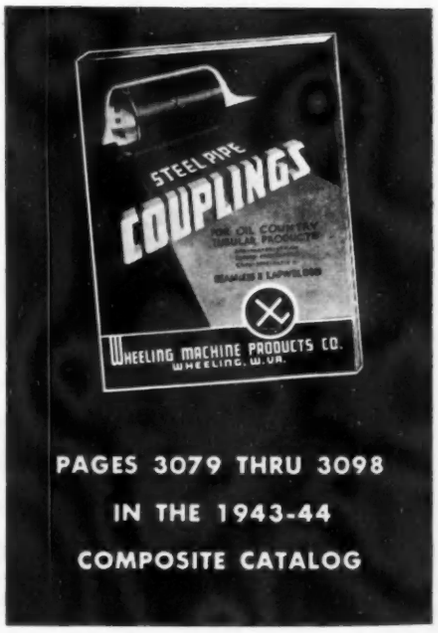
NORTH TEXAS

Archer County: British-American O. P. Co.'s W. F. George 1-B, ne ne ne H&TC S, blk 4, 3 mi sw Dundee, lcn 3200-ft test.

Jack County: Brazos River Gas Co.'s Hartnett 1, 1980 ft ewl 990 ft snl TE&L Co. sec 855, lcn.

King County: Gulf's R. B. Masterson 1, 480 ft snl 4130 ft wel sec 1, E. L. Ribble sur A-1207, dk for 7500-ft Ellenburger test.

Young County: Northern Ordnance's W. L. Boyd 1, 450 ft snl 567 ft ewl TE&L Co. sec 1455, lcn 5000-ft Ellenburger test.



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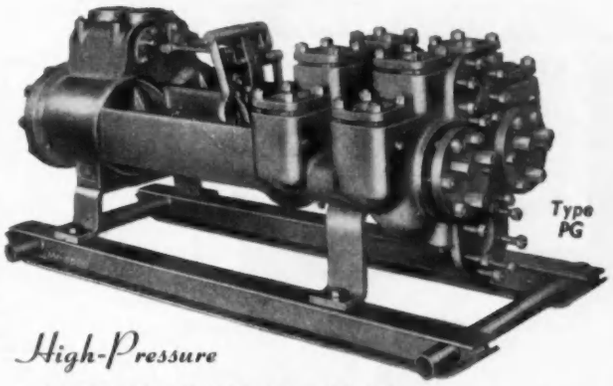

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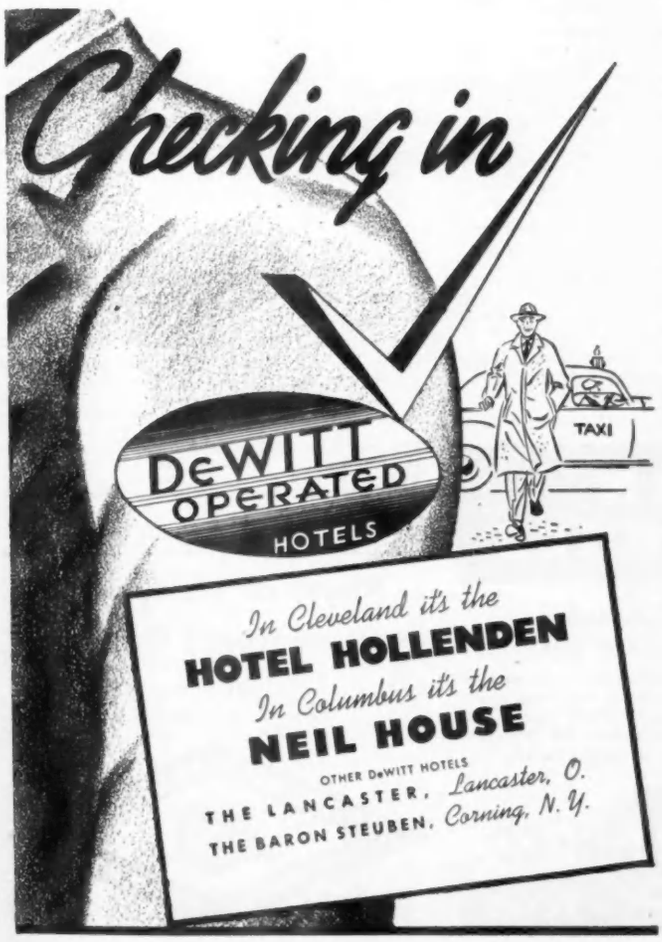

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Squeaks from the Bull Wheel

Road to Recovery

The "road hog" was semi-conscious in a hospital after the crash.

"How is he this morning?"

"Oh, he keeps putting out his hand."

"Ah! He's turning the corner."

Feminine

"What's the difference between a fort and a fortress?"

"Well, a fortress is much harder to silence."

Shelling in Order

"The enemy are as thick as peas. What shall we do?"

"Shell them."

Good Car

"Say, this car won't climb a hill! You said it was a fine machine!"

Dealer: "I said, 'On the level it's a good car'."

Paving the Way

"Suppose I teach you to play cards now, and then you'll know all about it after we're married."

"That'll be lovely. What game will you teach me?"

"Solitaire."

Or Anywhere

"What's worse than eating hash at a restaurant where you don't know what's in it?"

"Eating it at home where you do know."

Take It Easy!

A lawyer for a railroad was cross-examining a man who was suing the company. The man on the witness stand was the lawyer's doctor. The lawyer's face was red and he was shouting the usual "Where were you on the night of . . ." questions. The doctor raised his hand and said:

"Now don't be a fool, McGregor. I've warned you about your high blood pressure. Take it easy."

After that the cross-examination proceeded in a much subdued manner.

Ominous Warning

Missionary: "Poor man! So you know nothing of religion."

Cannibal: "Ah, yes. We got a taste of it when the last missionary was here."

Broken Resolutions

MacGregor and MacPherson decided to swear off whiskey, but MacGregor thought it would be best if they had one bottle to put in the cupboard in case of illness.

After three days MacPherson could bear it no longer and said:

"MacGregor, Ah'm not verra weel today."

"Too late, MacPherson, Ah was verra sick myself all day yesterday!"

Not All of It

Advertisement: "You get the girl, we'll do the rest."

Youthful Groom: "That's hardly fair."

True Enough

One subject in the examination was: "Name two Indian tribes of the Southwest and give details as to their customs and habits."

The applicant wrote: "Two Indian tribes were the Casseroles and the Semicolons. They wore feathers in their customs and their habits was bad."

Just One

One man who has been a sergeant in the army for more than a year was challenged by a friend, who demanded to know why he had not become a second lieutenant:

The sergeant smiled.

"Remember the last war?" he asked. The other did.

"Remember Sergt. York?" asked the sergeant. The other man nodded.

"Chum," said the sergeant, "just name me one of the second lieutenants in that war."

Danger Signal

"Kiss me once more like that and I'm yours for life."

"Thanks for the warning."

Stunted

"It's this old devil of a husband of mine. He's hittin' the bottle agin, and if he don't stop it's gonna kill him!"

"Isn't he ninety-seven already?"

"Yessah, but I just been tellin' him if he hadn't been boozin' all these years he might be a hundred by now!"

Zoology

Did you ever observe the quadruped?
He wags a tail and has only one head,
Two ears, two eyes, one mouth, one nose,
And generally smells wherever he goes;
He doesn't wear clothes, but he never minds—
He has fore legs in front and two behinds.

CURTIN CENTRIFUGES

Give You Quick, Accurate Results
With Less Effort . . . at Less Cost

Simple in design, ruggedly built for heavy duty service. Gear ratio and throw of crank produce required speed with no strain. Heads and cranks of 100 CC and 15 CC machines are interchangeable. Meets A.S.T.M. Standard Method D-96 and A.P.I. Code No. 25 requirements. Ask for full details.

W·H·CURTIN & CO. Inc.
HOUSTON U·S·A TEXAS

Physical analysis of Natural Gas
at the well
ASSOCIATED ENGINEERS
GAS LABORATORY
1912 WEST GRAY HOUSTON, TEXAS

You Wouldn't Drive a Car Without Fenders

. . . to many drilling and producing operators Patterson-Ballagh Pipe Wipers are just as essential. Within the past few years these useful devices have become standard equipment on the majority of drilling rigs and producing leases.

As illustrated at the right, this reinforced disc of Patterson-Ballagh PBX artificial rubber fits snugly over the pipe. As the pipe is pulled from the hole, the mud is squeegeed from the pipe. So completely is it removed that *no wash water is needed*. The Pipe Wiper floats freely below the master bushing. Its action is automatic. No attention is required. Users report savings that are almost unbelievable, declaring that mud weight material savings alone pay for the Wiper every trip, yet has an extremely long life.

And here's a tip. The worn Wiper still has an added value. Use it to back up the new Wiper when pulling pipe, and the old one alone when running into the hole. Saving the Wiper and insuring against fishing on the downward trip is worth a lot of money these days, especially when it's free.

See Composite Catalog

PATTERSON-BALLAGH

Los Angeles 1 • Houston 10 • New York City 6

PATTERSON-BALLAGH
PIPE WIPERS

Notes for the Equipment Buyer and User

Remote Control Valve
GROVE REGULATOR COMPANY

Grove Regulator Company, 6567 Green Street, Oakland 8, California, has developed the Grove Flexflo Remote Control Valve. Identified as an "expansible tube type," the valve operates by manual or automatic remote control on the hydraulic principle of balanced and unbalanced fluid line pressure. So little force is required to operate the valve, according to the manufacturers, that a large 24-inch valve can be opened or closed as easily as a 1½-inch.

Designed for cold fluid service, the valve is especially suited for handling oil, gases, salt water, water, air or chemical solutions. Since one non-metallic operating part only is utilized in the construction, the valves offer maximum resistance to corrosion and erosion as well as electrolytic action, and are said to be automatically self-compensating for wear.

Four parts make up the valve assembly: the valve head, the flange head, a slotted pipe-like core with a solid barrier in the center, and a cylindrical flexible tube. This resilient tube is stretched tightly over the core. The tube and core slip into the valve body as a unit and are firmly held in place by the bolted flange head. The flanged ends of the tube serves as a leak-proof gasket sealing off an encircling pressure chamber from the flow stream. Existing fluid pressure in the line forces the tube to fully expand against the inner wall surface of the encasing valve body, thereby opening the valve and permitting a constantly smooth streamline flow. This occurs when the remote-control valve is closed. By opening the small remote-control valve, line pressure is diverted into the actuating chamber and establishes a pressure balance on the inner and outer walls of the expansible tube. The tube then "flexes" closed over the surface of the core. Static line pressure then maintains a positive, bubble-tight, air-tight shut off of the valve indefinitely.

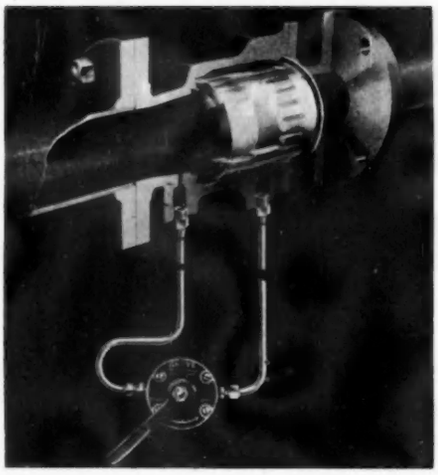
The valve requires no more head room than a pipe. Several valves can be controlled from a central remote-control station, and can be operated hydraulically or pneumatically by various systems such as manual, electro-solonoid, mechanical or automatic remote control.

Portable Riggers' Vise
PATRICK-McDERMOTT & COMPANY

Patrick-McDermott & Company, 1042 South Olive Street, Los Angeles, California, announces the P-M Portable Riggers' Forming Vise for splicing and clamping wire rope and cable for forming around the thimble or in forming slings.

Since it handles all diameters of wire rope and cable from 3/8-inch to 1½-inch diameter without the use of size adapters, this equipment is particularly adaptable to oil-field operations.

The vise is designed and built in such a manner that the shaft levers give complete and easy control of both front and back jaws. Wire rope or cable is securely held and formed in the vise, with guards to protect the acme screw threads from damage and friction of the wire rope. Rigid construction assures maximum strength and durability. Operations are conducted in a minimum of time.



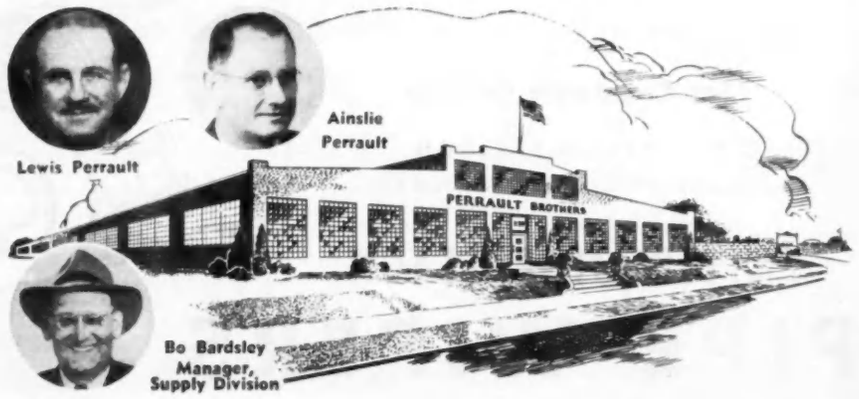
Grove Valve

The vise weighs approximately 115 pounds. Length of base, 19½ inches; front of base, 17½ inches; jaw spread, 10½ inches; front screw, 1-9/16 inches acme thread on right and 1¼ inches thread on left; jaws of hardened steel; screw shaft of alloy steel; slots in base dovetailed to accept dovetailed jaws; base drilled with four 5/8-inch holes for mounting in flat or horizontal position.

Perrault Brothers Move To New Quarters in Tulsa

Perrault Brothers announce removal to a new location, 1130 North Boston Street, Tulsa. Formerly known as the Petroleum Coating Machine Company, this company furnishes line-traveling combination coating and wrapping machines for pipe lines. In addition to the line traveling type of machines, they also have stationary, semi-portable yard type cleaning and priming, coating and wrapping machines.

The company entered the pipe-line equipment and supply business in 1943, and recently secured the services of Bo Bardsley to manage this department, with the title of manager of the pipe-line equipment division.



Welding Generator Set
CENTURY ELECTRIC COMPANY

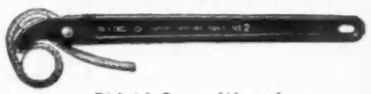
Century Electric Company, St. Louis 3, Missouri, has announced a motor generator set which will supply welding power for from 15 to 30 men, welding at the same time.

The motor is a 160 horsepower, 440 volt, 60 cycle, 3 phase, 1160 RPM, one hour 50° C temperature rise, squirrel cage induction type motor with drip-proof construction.

This motor drives a 70 volt, 1500 ampere, flat compounded, direct-current generator, rated one hour 50° temperature rise.

Ridgid Strap Wrench
RIDGE TOOL COMPANY

Ridge Tool Company, Elyria, Ohio, has added a strap wrench to its line of wrenches. The strap wrench is made with an I-beam handle and solid head in one piece, with a handy hang-up hole in the end. The special webbing strap is quickly removed for replacement by pushing out a pin held by spring clips.



Ridgid Strap Wrench

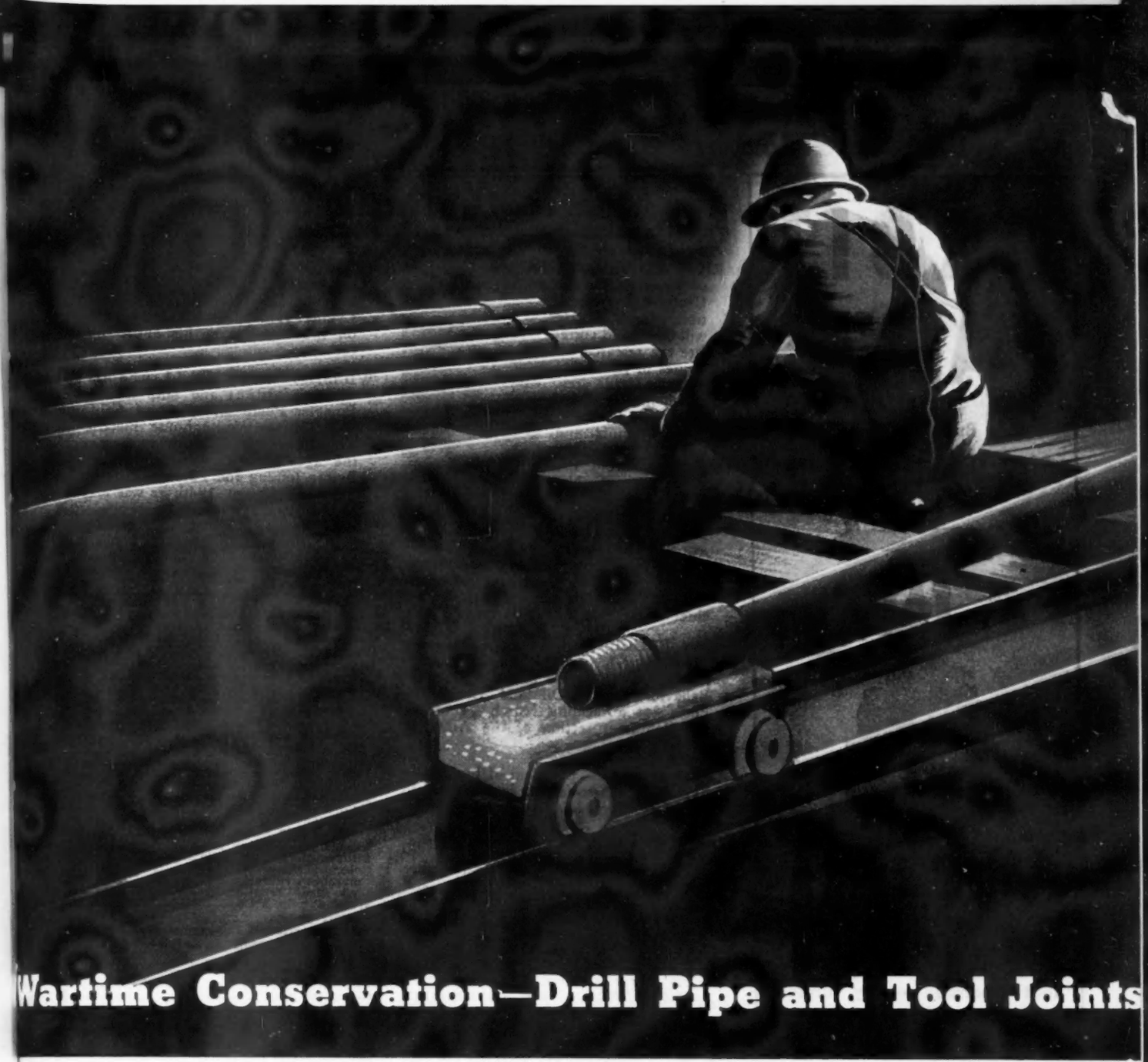
The wrench is made in two sizes: No. 2, capacity, ⅛-inch to 2 inches, with a 17-inch strap; No. 5 capacity 1-inch to 5 inches, with 30-inch strap.

Eastman Catalog

Eastman Oil Well Surveys, Long Beach, California, has just issued Catalog 43 which illustrates and describes Eastman directional, drilling and surveying services and equipment.

Cooper-Bessemer Wins E Award from Army-Navy

The Cooper-Bessemer Corporation, with plants at Mount Vernon, Ohio, and Grove City, Pennsylvania, has been awarded the Army-Navy E for excellence in production of war equipment. The company has previously been awarded the Treasury Department's Minute-Man flag for participation in War Bond subscriptions, and the Maritime M with two gold stars, for excellence of production.



Wartime Conservation—Drill Pipe and Tool Joints

Information supplied by "The Oil Weekly"

Handling damage, as distinguished from normal service wear, compels the premature replacement of many joints of drill pipe. This shortened pipe life span imposes extra demands on the pipe mill, the maker of tool joints, and the already overloaded oilfield transportation system.

Any device which protects pipe during a handling operation prolongs pipe life by eliminating the damage hazard. The tool joint is especially exposed during the time a length of pipe is being joined to or withdrawn from the drilling string; nicks, damaged threads and distortion suffered at this time contributing to twist-offs, washouts and other pipe losses.

Proper handling of the joint during this operation may be assured by providing a buggy on which the joint is supported, the buggy being "shod" with a pad of wood, hollowed to form a centering device which retains the joint. The buggy, equipped with flanged wheels, is made to travel on a track of channel steel, bridging the gap from derrick chute to pipe rack. A length of pipe, the joint supported on the buggy, travels freely under the urge of the derrick line action, and the pipe is handled with a minimum of effort and utmost protection.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

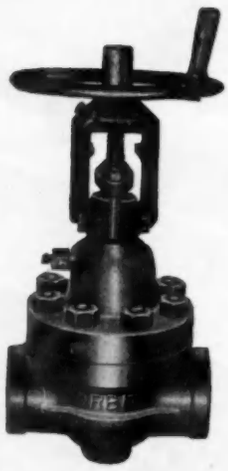
Climax Molybdenum Company

500 Fifth Avenue · New York City

MOLY

ORBIT VALVES

Are Built to "Take It"



ORBIT FLOW LINE VALVE

A full round opening valve that operates easily under high pressures. No grease required to effect a seal. Compact in design, yet built to "take it."

•

YOUR ORBIT VALVES

will last for the duration. Meanwhile, if you have any questions regarding their care or maintenance, write us.

•

OIL WELL IMPROVEMENTS CO.

SINCE 1912

TULSA, OKLAHOMA

Men in the Industry's News

RICHARD V. HUGHES became Director of Research for the Pennsylvania Grade Crude Oil Association March 1. He will direct and correlate the research activities in the Pennsylvania Grade area, which includes New York, Pennsylvania, West Virginia and Ohio. Hughes has degrees from the University of Nebraska and The Johns Hopkins University, and has been associated with various geologic and petroleum engineering concerns since 1925, spending some time in South America. Since 1941 he was chief of the Development Unit of PAW.

W. A. BRUCE, The Carter Oil Company, spoke on "A Study of the Smackover Limestone Formations and the Reservoir Behavior of Its Oil and Condensate Pools" at a meeting March 14 of the Mid-Continent section of the AIME at Tulsa.

A. T. CAMPBELL, president of Instrument Exploratory Association, has transferred his office from Shawnee to McAlester, Oklahoma.

H. J. SHERIDAN of Production Equipment Company, has opened a sales office at 310 Thompson Building, Tulsa, and will act as factory representative for Jensen Brothers Manufacturing Company of Coffeyville, Kansas.

S. R. CLINKSCALES has resigned as director of the Material Division, District 2, Tulsa, PAW, to join Mid-Continent Supply Company as division tubular manager.

DR. H. S. McQUEEN, member for the past 20 years of the Missouri Geological Survey, has resigned to join Aluminum Corporation of America. He is succeeded by Dr. Edward L. Clark, formerly head of the geology department at Drury College, Springfield, Missouri.

T. F. P. KELLY has been appointed representative of The Barrett Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York, to contact corrosion engineers from coast to coast, in the interest of cathodic protection. C. T. Davis has also been appointed representative of the company in Texas, Louisiana, Mississippi, Alabama, Arkansas, Florida, and New Mexico.

T. F. P. Kelly

C. T. Davis

GEORGE A. CLARKE of Houston, sales representative of W-K-M Company, died at Tulsa, March 9. Clarke was born in Cygnet. He had been associated with the oil industry during his entire business career.

WILLIAM D. TURNBULL, who has been vice president and sales manager of Pomona Pump Company of California, has rejoined Westinghouse Electric and Manufacturing Company as manager of the agency and specialties department. Before joining the Pomona Pump Company in February, 1940, he was manager of the Westinghouse machinery electrification section.

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